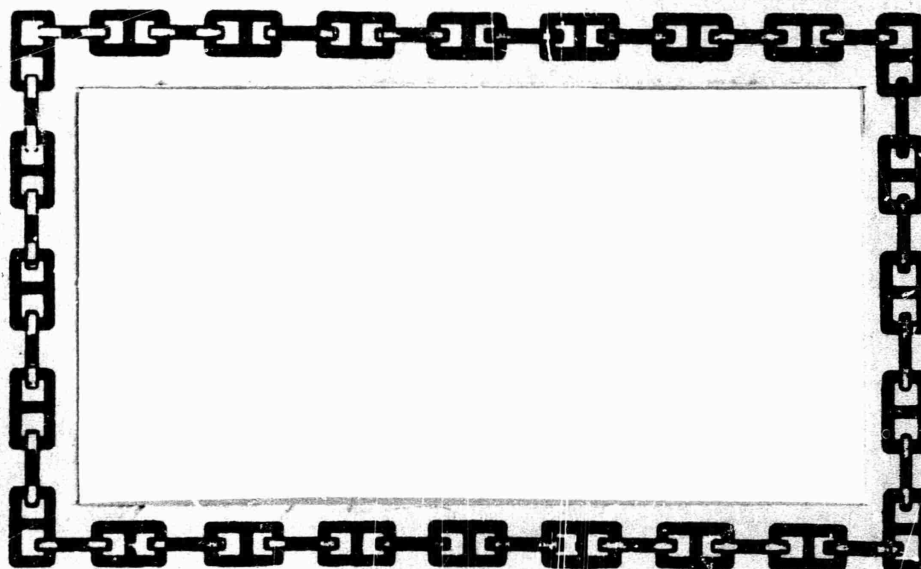
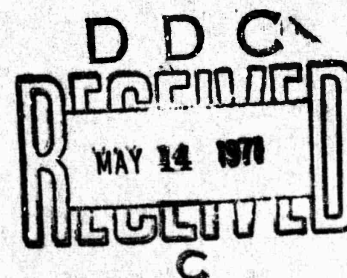
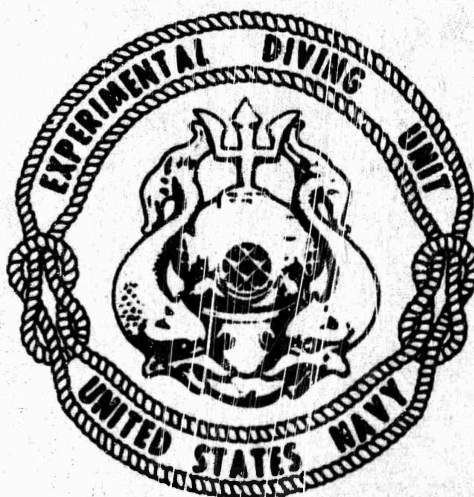


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U. S. NAVY EXPERIMENTAL DIVING UNIT



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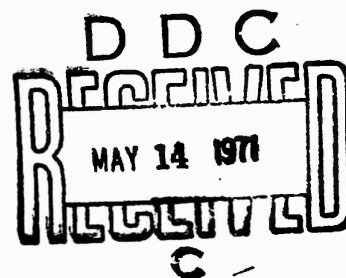
REPORT OF EXPERIMENTAL DIVES
FOR SEALAB III SURFACE SUPPORT
DECOMPRESSION SCHEDULES

1 December 1970

by

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ABSTRACT

This report describes the decompression schedules that were developed and tested by the U.S. Navy Experimental Diving Unit (NAVXDIVINGU) in preparation for SEALAB III. The need was foreseen for a surface supported diving capability for underwater tasks of relatively short duration which would not necessitate the use of saturation diving with its resulting long decompression times. The decompression schedules described in this report were designed to provide that capability.

Decompression schedules were developed for dives of 300, 350, 400 and 450 feet with bottom times of 15, 30, and 60 minutes at each depth. A schedule for a 500-foot dive with a bottom time of 30 minutes was also developed. These developmental schedules were tested in a series of 54 experimental dives in the NAVXDIVINGU facility during the period April 1965 through July 1967. Certain schedules were modified and retested as a result of experience gained in the initial testing effort.

This report presents each developmental decompression schedule and summarizes the experimental dives that were made to evaluate them. Problems encountered, particularly problems of decompression sickness, are also summarized. The final decompression schedules which emerged from the experimental dives and evaluation of their results are presented in detail.

The final schedules are published for information of all interested activities and individuals. At the time of publication of this report, these schedules had not been evaluated in the open sea and have not been promulgated by the Navy for routine diving operations.

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The experimental dives described in this Report were developed and tested at the Navy Experimental Diving Unit (EDU) under the direction of Captain R. D. Workman, MC, USN and Commander, R. C. Bornman, MC, USN, during the period April 1965 through July 1967. The authors have extracted the available data from EDU Diving Logs in an effort to make the information available to the general diving community.

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Section 1

INTRODUCTION

1.1 PURPOSE

This report presents the results of a series of chamber dives conducted at the U.S. Navy Experimental Diving Unit (NAVXDIVINGU) during 1965, 1966, and 1967 in preparation for SEALAB III. The primary purpose of these dives was to develop and test a set of decompression schedules for short, non-saturation dives, between the surface and the sea floor habitat. Schedules were modified and retested when symptoms of decompression sickness occurred with the objective of developing a safe final schedule for each dive group.

1.2 BACKGROUND

Although the SEALAB III experiment was focused primarily on the use of an underwater habitat it was foreseen that there would also be a requirement for numerous short dives from the surface to the depth of the habitat.

NAVXDIVINGU undertook the project of developing the required decompression schedules, accomplishing the work with its own divers and diving facilities. A few dives were conducted in April, 1965. Work continued intermittently on the project throughout 1966 and was completed in the summer of 1967. The project was accomplished concurrently with other experimental programs during this period.

1.3 SCOPE

Section 2 of this report describes the methods and dive procedures that were used in the developmental program. Section 3 presents the dive results. Dives are grouped according to depth and bottom time. For each dive group, detailed decompression schedules are tabulated and the results of each dive are summarized. Variations from schedules and incidents of decompression sickness are also summarized. The evolution of the developmental decompression schedule is shown. Section 4 discusses results of the program and presents an overall summary of the dives that were conducted.

The final decompression schedules for the 13 dive groups involved in the program are presented in Appendix A. Appendix B provides data on the divers and Appendix C recapitulates the incidents of confirmed and possible decompression sickness by each dive group and each diver.

Section 2

METHODS AND DIVE PROCEDURES

2.1 DIVING FACILITIES

The experimental dives described in this report were conducted under controlled conditions in a diving chamber with a wetpot at NAVXDIVINGU. The water temperature for the experimental dives ranged from a low of 68°F. to a high of 90°F. The average temperature was about 80°F. Figure 1 is a diagram of the diving chamber.

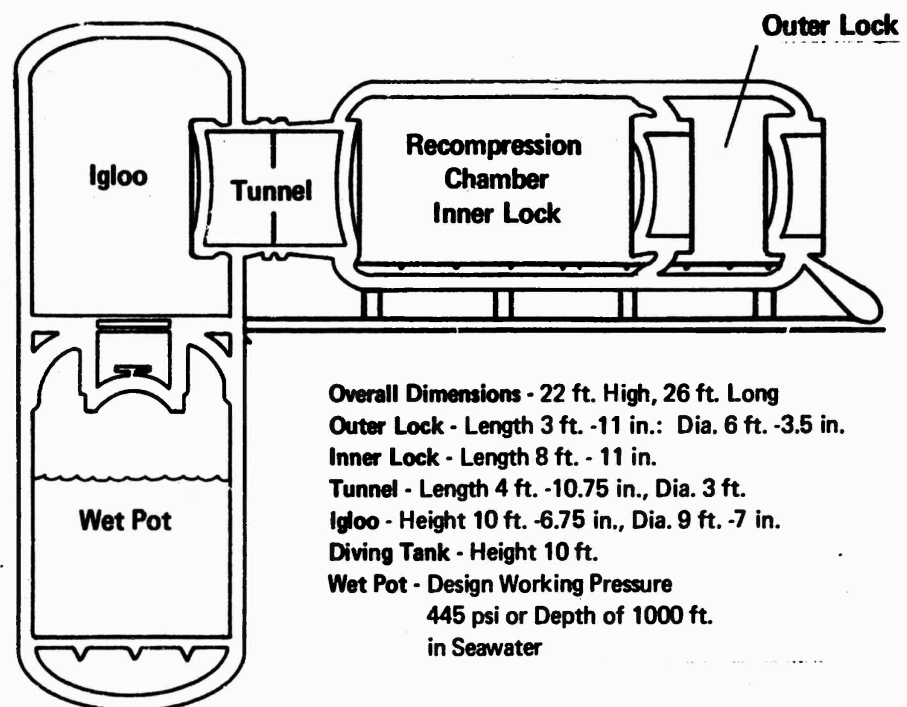


Figure 1. NAVXDIVINGU Chamber Facility

2.2 BREATHING EQUIPMENT

The majority of dives conducted in this program were two-man dives. The breathing equipment used for these dives was the modified semi-closed circuit MK VI back pack, surfaced supplied through a Garrahan flow control block.

A few dives had three subjects. The MK VI equipment was used by two of the divers on these three-man dives. The third diver used a MK VIII semi-closed circuit breathing apparatus.

2.3 GENERAL DIVE PROCEDURES

The divers breathed air in the chamber until reaching a specified depth, usually 100 feet. At that point they switched to the HeO₂ mixture supplied by the breathing apparatus, dropped into the wetpot, and were compressed to the bottom pressure.

At depth the subjects followed an alternating work pattern which included lifting weights, swimming against a trapeze (equivalent to 0.8 knots) and other work routines. Upon completion of the prescribed bottom time, the divers re-entered the igloo to begin decompression. On most dives, a shift to a second HeO₂ mixture was made, normally upon or shortly after leaving the bottom depth.

In the early phase of decompression, since the igloo and recompression chamber contained an air atmosphere, the divers had to remain on the breathing apparatus or on a mask as long as a HeO₂ mixture was required. A shift to chamber air was normally made at 100 feet on ascent, divers removing the HeO₂ mask/apparatus and breathing chamber air at the prescribed time. During the remainder of the decompression divers alternated breathing chamber air and 100% oxygen (by mask), normally finishing the dive on the latter medium.

Rates of travel varied throughout the dive groups. Generally, about five minutes was scheduled for the descent, including time for shifting from chamber air to the HeO₂ breathing mixture. Most of the minor deviations from the schedules occurred during descent because of changes from the scheduled rates of travel. Rates of travel during ascent were normally adhered to closely once the schedule entered into its prescribed decompression stops. The last 10 seconds of each decompression stop were generally used to travel to the next shallower stop.

2.4 CRITERIA FOR A SUCCESSFUL SCHEDULE

Circumstances permitted only a small number of dives in most of the groups to be tested. Generally, if two dives (normally four man dives) produced no decompression sickness in a given dive group, testing shifted to another group. In instances where decompression sickness was encountered, additional dives were made whenever possible using modified schedules until a bends-free dive was made.

The most successful schedule to emerge for a given dive group from the above process was selected as the final schedule for that dive group. These final decompression schedules are presented in Appendix A along with information on the number of bends-free dives and the number of cases of decompression sickness experienced with each schedule.

2.5 SUMMARY OF DIVE GROUPS

Dives that have been included in this report were conducted at depths ranging from 300 feet to 500 feet and with bottom times ranging from 15 minutes to 60 minutes.

The dives are analyzed and presented in the following groups:

DIVE GROUP

| Depth (Feet - Sea Water) | Bottom Time* (Minutes) |
|-----------------------------|---------------------------|
| 300 | 15 |
| 300 | 30 |
| 300 | 60 |
| 350 | 15 |
| 350 | 30 |
| 350 | 60 |
| 400 | 15 |
| 400 | 30 |
| 400 | 60 |
| 450 | 15 |
| 450 | 30 |
| 450 | 60 |
| 500 | 30 |

* Bottom time includes descent time.

Section 3

RESULTS

The results of the dives that were conducted in each of the 13 groups are presented in this section.

For each group, the initial decompression schedule tested is presented first, followed by a summary of the dives conducted in accordance with that schedule. Problems encountered during and after the dives are then described. Modifications to the initial schedule, if any, are addressed and summaries of dives conducted under modified schedules are also presented. Where appropriate, the various schedules used for one dive group are presented in tabular form for purposes of easy comparison.

The most successful decompression schedule in each dive group is selected as the final decompression schedule for that group and is presented in Appendix A.

3.1 300-FOOT/15-MINUTE DIVES

3.1.1 Initial Decompression Schedule

The initial decompression schedule for this dive group is presented in Table 1 and the summary of the dives conducted using this schedule is presented in Table 2.

Table 1
INITIAL SCHEDULE 300-FOOT/15-MINUTE

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|------------------|
| 0-100 | 1 | 00:00:00 - 00:01:00 | Air |
| 100 | 0.5 | 00:01:00 - 00:01:30 | HeO ₂ |
| 100-300 | 2 | 00:01:30 - 00:03:30 | 80/20 |
| 300 | 11.5 | 00:03:30 - 00:15:00 | ↓ |
| 300-120 | 3 | 00:15:00 - 00:18:00 | Air |
| 120 | 1 | 00:18:00 - 00:19:00 | ↓ |
| 110 | 2 | 00:19:00 - 00:21:00 | Air |
| 100 | 2 | 00:21:00 - 00:23:00 | ↓ |
| 90 | 2 | 00:23:00 - 00:25:00 | Air |
| 80 | 5 | 00:25:00 - 00:30:00 | ↓ |
| 70 | 5 | 00:30:00 - 00:35:00 | Air |
| 60 | 5 | 00:35:00 - 00:40:00 | ↓ |
| 50 | 5 | 00:40:00 - 00:45:00 | Air |
| 40 | 15 | 00:45:00 - 01:00:00 | O ₂ |
| 30 | 15 | 01:00:00 - 01:15:00 | Air |
| 20 | 25 | 01:15:00 - 01:40:00 | O ₂ |
| 10 | 25 | 01:40:00 - 02:05:00 | Air |
| 10-0 | 10 | 02:05:00 - 02:15:00 | O ₂ |

Times at the decompression stops include the time required for travel to next stop.

3.1.2 Problems/Modifications

All eight dives in this group were made under the initial schedule. No decompression sickness or other problems were encountered. No adjustments to the initial schedule were made.

Dives 1, 2 and 8 varied from schedule on descent in that the descent from 100 feet was made at an average rate of 60 FPM vice the prescribed rate of 100 FPM. This increased the descent time to about five minutes for these dives. Otherwise, all dives adhered closely to schedule with no significant variations.

Table 2

INITIAL SCHEDULE SUMMARY 300-FOOT/15-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|------------------|-----------------------------|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 1 | 31 May 67 | Mulally Douthit | HeO ₂ 80%/20% | 36.0 34.0 | 00:05:05 | 02:14:30 | No |
| 2 | 31 May 67 | Meeks French | HeO ₂ 80%/20% | 36.0 34.0 | 00:05:23 | 02:15:00 | No |
| 3 | 27 Jun 67 | Pratt Cato | HeO ₂ 80%/20% | 35.0 34.0 | 00:03:45 | 02:15:00 | No |
| 4 | 27 Jun 67 | Jones Mulally | HeO ₂ 80%/20% | 33.8 33.8 | 00:03:30 | 02:15:00 | No |
| 5 | 28 Jun 67 | Duff Brauner | HeO ₂ 80%/20% | 34.6 33.5 | 00:03:27 | 02:15:00 | No |
| 6 | 3 Jul 67 | Kerr Beckham | HeO ₂ 80%/20% | 34.4 33.6 | 00:03:25 | 02:15:30 | No |
| 7 | 5 Jul 67 | Brady Villasenor | HeO ₂ 80%/20% | 33.0 34.0 | 00:03:00 | 02:15:25 | No |
| 8 | 5 Jul 67 | Langod Green | HeO ₂ 80%/20% | 34.0 33.5 | 00:05:20 | 02:15:00 | No |

The initial schedule appears unmodified as the final schedule for this dive group as Table A-1 in Appendix A.

3.2 300-FOOT/30-MINUTE

3.2.1 Initial Decompression Schedule

The initial decompression schedule for this group is presented in Table 3 and the summary of the dives using this schedule is presented in Table 4.

Table 3

INITIAL SCHEDULE 300-FOOT/30-MINUTE

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|------------------|
| 0-75 | 1 | 00:00:00 - 00:01:00 | Air |
| 75 | 0.5 | 00:01:00 - 00:01:30 | ↓ |
| 75-300 | 3 | 00:01:30 - 00:04:30 | HeO ₂ |
| 300 | 25.5 | 00:04:30 - 00:30:00 | 85/15 |
| 300-180 | 2 | 00:30:00 - 00:32:00 | ↓ |
| 180-150 | 1 | 00:32:00 - 00:33:00 | ↓ |
| 150 | 1 | 00:33:00 - 00:34:00 | ↓ |
| 140 | 2 | 00:34:00 - 00:36:00 | ↓ |
| 130 | 2 | 00:36:00 - 00:38:00 | ↓ |
| 120 | 5 | 00:38:00 - 00:43:00 | Air |
| 110 | 5 | 00:43:00 - 00:48:00 | ↓ |
| 100 | 5 | 00:48:00 - 00:53:00 | ↓ |
| 90 | 5 | 00:53:00 - 00:58:00 | ↓ |
| 80 | 5 | 00:58:00 - 01:03:00 | ↓ |
| 70 | 15 | 01:03:00 - 01:18:00 | ↓ |
| 60 | 15 | 01:18:00 - 01:33:00 | ↓ |
| 50 | 15 | 01:33:00 - 01:48:00 | ↓ |
| 40 | 30 | 01:48:00 - 02:18:00 | O ₂ |
| 30 | 30 | 02:18:00 - 02:48:00 | Air |
| 20 | 30 | 02:48:00 - 03:18:00 | O ₂ |
| 20 | 30 | 03:18:00 - 03:48:00 | Air |
| 10 | 30 | 03:48:00 - 04:18:00 | O ₂ |
| 10 | 30 | 04:18:00 - 04:48:00 | Air |
| 10 | 20 | 04:48:00 - 05:08:00 | O ₂ |
| 10-0 | 10 | 05:08:00 - 05:18:00 | Air |

Times at the decompression stops include the time required for travel to next stop.

Table 4

INITIAL SCHEDULE SUMMARY 300-FOOT/30-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|-------------------|-----------------------------|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 1 | 29 Jun 67 | Kennedy Sundstrom | HeO ₂ 85%/15% | 34.6 32.8 | 00:04:15 | 05:18:00 | No |
| 2 | 30 Jun 67 | Mesplay Mulally | HeO ₂ 85%/15% | 35.5 35.0 | 00:04:30 | 05:18:00 | No |
| 3 | 6 Jul 67 | Mullen Mandible | HeO ₂ 85%/15% | 32.5 33.4 | 00:04:25 | 07:47:45 | Mullen |

3.2.2 Problems/Modifications

The initial schedule was used for Dives 1, 2, and 3. Dives 1 and 2 adhered to schedule with no problems encountered. Dive 3 adhered to schedule to the 40-foot depth at elapsed time 01:48:00. Mullen reported pain in his right knee at 01:55:00, having first felt it just before leaving the 50-foot decompression stop. The pain was getting worse at 40 feet. He was recompressed to 100 feet, reporting total relief at 67 feet. Mandible accompanied the treatment. Both divers finished the dive on an extended schedule.

Modification A Schedule was tested during Dives 4 and 5. This schedule varied only slightly from the initial schedule.

A summary of the dives conducted under Modification A Schedule is presented in Table 5.

Both dives 4 and 5 were conducted as scheduled to the point of beginning the final ascent from 10 feet to the surface at elapsed time 05:22:00. The time of reaching surface in Dive 4 was recorded incorrectly; it is assumed to be 05:32:00 based on the schedule. The final ascent in Dive 5 was made in 30 seconds instead of the scheduled 10 minutes, accounting for the reduced total time of dive of 05:22:30.

Jones experienced decompression sickness beginning within 7 minutes after Dive 5. He was pale, weak and numb in both arms, and had pain in his right forearm. He was treated with recompression at 60 feet with apparent relief, the treatment period lasting almost 5 hours on Treatment Table VI. Nine hours later, a second period, four hours in duration, was necessary as a result of pain in his groin and both legs.

Table 5

MODIFICATION A SCHEDULE SUMMARY 300-FOOT/30-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|--------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 4 | 7 Jul 67 | Wyatt Hendry | HeO ₂ 85%/15% 80%/20% | 32.9 34.4 | 00:03:15 | 05:32:00 | No |
| 5 | 10 Jul 67 | Jones Meeks | HeO ₂ 85%/15% 80%/20% | Not Recorded | 00:04:00 | 05:22:30 | Jones |

As a result of the problems with the first two schedules, Modification B Schedule was developed (Table 7). This schedule significantly extended the total time of dive. The resulting total time of dive is 06:36:00 in Modification B Schedule as compared to 05:18:00 in the initial schedule and 05:32:00 in Modification A Schedule.

Dives 6 through 10 were conducted to test Modification B Schedule (Table 6). Descent was 1 minute slow on Dive 6 primarily because of a long hold at 75 feet. Divers also reached bottom late on Dive 9 because Hendry had ear trouble on descent. Except for these minor variations, Dives 6 through 10 adhered precisely to schedule. No problems were encountered.

The initial schedules and the modifications are compared in Table 7. Modification B Schedule appears as the final decompression schedule for this dive group as Table A-2 in Appendix A.

Table 6

MODIFICATION B SCHEDULE SUMMARY 300-FOOT/30-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|-------------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 6 | 12 Jul 67 | Cato Pratt | HeO ₂ 85%/15% 80%/20% | Not Recorded | 00:05:30 | 06:36:00 | No |
| 7 | 13 Jul 67 | Kennedy Sundstrom | HeO ₂ 85%/15% 80%/20% | Not Recorded | 00:04:20 | 06:36:00 | No |
| 8 | 14 Jul 67 | Wyatt Winters | HeO ₂ 85%/15% 80%/20% | 36.2 38.0 | 00:04:00 | 06:36:00 | No |
| 9 | 17 Jul 67 | Mulally Hendry | HeO ₂ 85%/15% 80%/20% | 38.2 36.2 | 00:07:10 | 06:36:00 | No |
| 10 | 18 Jul 67 | Meeks Houle | HeO ₂ 85%/15% 80%/20% | 38.0 36.2 | 00:03:55 | 06:36:00 | No |

Table 7

SCHEDULE COMPARISONS 300-FOOT/30-MINUTE

| Depth (ft) | | | Time (min) | | | Breathing Mixture | | |
|------------|---------|---------|------------|-------|-------|-------------------|------------------|------------------|
| Schedule | | | Schedule | | | Schedule | | |
| Init. | Mod A | Mod B | Init. | Mod A | Mod B | Init. | Mod A | Mod B |
| 0-75 | 0-100 | 0-75 | 1 | 1 | 1 | Air | Air | Air |
| 75 | 100 | 75 | 0.5 | 0.5 | 0.5 | ↓ | ↓ | ↓ |
| 75-300 | 100-300 | 75-300 | 3 | 2 | 3 | HeO ₂ | HeO ₂ | HeO ₂ |
| 300 | 300 | 300 | 25.5 | 26.5 | 25.5 | 85/15 | 85/15 | 85/15 |
| 300-180 | 300-170 | 300-180 | 2 | 2.5 | 2.5 | ↓ | HeO ₂ | ↓ |
| 180-150 | 170-150 | 180-150 | 1 | 0.5 | 0.5 | | 80/20 | ↓ |
| | | | | | | | | HeO ₂ |
| | 150 | | 1 | 1 | 1 | | | 80/20 |
| | 140 | | 2 | 2 | 2 | | | ↓ |
| | 130 | | 2 | 4 | 5 | | | ↓ |
| | | | | | | ↓ | ↓ | ↓ |
| | 120 | | 5 | 4 | 5 | Air | Air | ↓ |
| | 110 | | 5 | 4 | 5 | ↓ | ↓ | Air |
| | 100 | | 5 | 5 | 5 | | | ↓ |
| | 90 | | 5 | 6 | 5 | | | ↓ |
| | | | | | | | | ↓ |
| | 80 | | 5 | 12 | 15 | | | ↓ |
| | 70 | | 15 | 12 | 15 | | | ↓ |
| | 60 | | 15 | 14 | 15 | | | ↓ |
| | 50 | | 15 | 15 | 20 | | | ↓ |
| | | | | | | ↓ | ↓ | ↓ |
| | 40 | | 30 | 35 | 30 | O ₂ | ↓ | O ₂ |
| | 30 | | 30 | 25 | 30 | Air | O ₂ | Air |
| | | | | | | | | ↓ |
| | 30 | | - - | - - | 30 | - - | - - | O ₂ |
| | 20 | | 30 | 30 | 30 | O ₂ | Air | Air |
| | 20 | | 30 | 20 | 30 | Air | O ₂ | O ₂ |
| | 10 | | 30 | 30 | 30 | O ₂ | Air | Air |
| | 10 | | 30 | 20 | 30 | Air | O ₂ | O ₂ |
| | 10 | | 20 | 30 | 30 | O ₂ | Air | Air |
| | 10 | | - - | 20 | 20 | - - | O ₂ | O ₂ |
| | 10-0 | | 10 | 10 | 10 | Air | O ₂ | O ₂ |

TOTAL ELAPSED TIME:

| | |
|------------------|----------|
| Initial Schedule | 05:18:00 |
| Modification A | 05:32:00 |
| Modification B | 06:36:00 |

3.3 300-FOOT/60-MINUTE DIVES

3.3.1 Initial Decompression Schedule

The initial decompression schedule for this dive group is presented in Table 8 and the summary of the dives conducted using this schedule is presented in Table 9.

Table 8
INITIAL SCHEDULE 300-FOOT/60-MINUTE

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|------------------|
| 0-300 | 5 | 00:00:00 - 00:05:00 | HeO ₂ |
| 300 | 55 | 00:05:00 - 01:00:00 | 85/15 |
| | | | ↓ |
| 300-180 | 2 | 01:00:00 - 01:02:00 | HeO ₂ |
| 180-160 | 1 | 01:02:00 - 01:03:00 | 80/20 |
| 160 | 4 | 01:03:00 - 01:07:00 | |
| 160-150 | 1 | 01:07:00 - 01:08:00 | |
| 150 | 4 | 01:08:00 - 01:12:00 | |
| 150-140 | 1 | 01:12:00 - 01:13:00 | |
| 140 | 4 | 01:13:00 - 01:17:00 | |
| 140-130 | 1 | 01:17:00 - 01:18:00 | |
| 130 | 4 | 01:18:00 - 01:22:00 | |
| 130-120 | 1 | 01:22:00 - 01:23:00 | |
| 120 | 4 | 01:23:00 - 01:27:00 | |
| 120-110 | 1 | 01:27:00 - 01:28:00 | |
| 110 | 4 | 01:28:00 - 01:32:00 | |
| 110-100 | 1 | 01:32:00 - 01:33:00 | |
| 100 | 9 | 01:33:00 - 01:42:00 | |
| 100- 90 | 1 | 01:42:00 - 01:43:00 | |
| 90 | 14 | 01:43:00 - 01:57:00 | |
| 90- 80 | 1 | 01:57:00 - 01:58:00 | |
| 80 | 14 | 01:58:00 - 02:12:00 | Air |
| 80- 70 | 1 | 02:12:00 - 02:13:00 | |
| 70 | 14 | 02:13:00 - 02:27:00 | |
| 70- 60 | 1 | 02:27:00 - 02:28:00 | |
| 60 | 19 | 02:28:00 - 02:47:00 | |
| 60- 50 | 1 | 02:47:00 - 02:48:00 | |
| 50 | 25 | 02:48:00 - 03:13:00 | ↓ |

Table 8

INITIAL SCHEDULE 300-FOOT/60-MINUTE (Continued)

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|----------------|
| 50-40 | 5 | 03:13:00 - 03:18:00 | Air |
| 40 | 25 | 03:18:00 - 03:43:00 | ↓ |
| 40-35 | 5 | 03:43:00 - 03:48:00 | O ₂ |
| 35 | 10 | 03:48:00 - 03:58:00 | ↓ |
| 35-30 | 5 | 03:58:00 - 04:03:00 | Air |
| 30 | 25 | 04:03:00 - 04:28:00 | ↓ |
| 30-25 | 5 | 04:28:00 - 04:33:00 | O ₂ |
| 25 | 20 | 04:33:00 - 04:53:00 | ↓ |
| 20-25 | 5 | 04:53:00 - 04:58:00 | Air |
| 20 | 40 | 04:58:00 - 05:38:00 | ↓ |
| 20-15 | 5 | 05:38:00 - 05:43:00 | O ₂ |
| 15 | 30 | 05:43:00 - 06:13:00 | ↓ |
| 15-10 | 5 | 06:13:00 - 06:18:00 | Air |
| 10 | 55 | 06:18:00 - 07:13:00 | ↓ |
| 10-5 | 5 | 07:13:00 - 07:18:00 | O ₂ |
| 5 | 40 | 07:18:00 - 07:58:00 | ↓ |
| 5-0 | 5 | 07:58:00 - 08:03:00 | O ₂ |

Travel times are shown as separate entries throughout this schedule.

Table 9

INITIAL SCHEDULE SUMMARY 300-FOOT/60-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|---------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 1 | 13 May 65 | Bruneau Mundy | HeO ₂ 85%/15% 80%/20% | Not Recorded | 00:05:11 | 08:03:20 | No |
| 2 | 9 Sep 65 | Taylor Wyatt | HeO ₂ 85%/15% 80%/20% | Not Recorded | 00:05:05 | 08:02:50 | No |

3.3.2 Problems/Modifications

There were three dives made in this group. Dives 1 and 2 used the initial schedule. On Dive 1, the shift to 80% He 20% O₂ was made at 180 feet instead of at 300 feet, 2 minutes later than scheduled. Otherwise, both Dives 1 and 2 adhered closely to the initial schedule. No difficulties were encountered.

Dive 3 used Modification A Schedule (Appendix A, Table A-3). Again, no problems were encountered, although divers were held on six different occasions on descent between 120 feet and 300 feet for periods averaging about 20 seconds. They also used slower rates of travel on descent than the 60FPM prescribed in the schedule. These variations doubled the time required for descent as compared to the schedule. The reason for these changes was not recorded. Dive 3 adhered to Modification A Schedule except for these variations.

The two schedules are constructed differently. The initial schedule uses 10-foot intervals between decompression stops to 40 feet and then 5-foot intervals to the surface. Modification A Schedule uses 4-foot intervals between 160 feet and 60 feet and then uses 2-foot intervals up to 10 feet. Modification A Schedule extends the total time of dive from 08:03:00 to 08:43:00. About half of the 40 minute increase occurs in small increments between 50 feet and 10 feet; the other half occurs at the 10-foot depth. Modification A Schedule also uses Air down to 120 feet whereas the initial schedule uses 85% He 15% O₂ at the beginning of the dive.

A summary of the dive conducted on the Modification A Schedule is presented in Table 10. Modification A Schedule is presented as the final schedule in this dive group as Table A-3 in Appendix A.

Table 10

MODIFICATION A SCHEDULE SUMMARY 300-FOOT/60-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|----------|---------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 3 | 6 Apr 66 | Meeks Mesplay | HeO ₂ 85%/15% 80%/20% | Not Recorded | 00:10:55 | 08:43:18 | No |



3.4 350-FOOT/15-MINUTE DIVES

3.4.1 Initial decompression schedule

The initial decompression schedule for this dive group is presented in Table 11 and the summary of dives conducted using this schedule is presented in Table 12.

Table 11

INITIAL SCHEDULE 350-FOOT/15-MINUTE

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|---|
| 0-75 | 1 | 00:00:00 - 00:01:00 | Air |
| 75 | 0.5 | 00:01:00 - 00:01:30 | HeO ₂ |
| 75-350 | 5 | 00:01:30 - 00:06:30 | 85/15 |
| 350 | 3.5 | 00:06:30 - 00:15:00 |  |
| 350-170 | 3 | 00:15:00 - 00:18:00 | |
| 170-140 | 1 | 00:18:00 - 00:19:00 | |
| 140 | 2 | 00:19:00 - 00:21:00 | |
| 130 | 2 | 00:21:00 - 00:23:00 | |
| 120 | 2 | 00:23:00 - 00:25:00 | |
| 110 | 2 | 00:25:00 - 00:27:00 | |
| 100 | 2 | 00:27:00 - 00:29:00 | |
| 90 | 5 | 00:29:00 - 00:34:00 | |
| 80 | 5 | 00:34:00 - 00:39:00 | |
| 70 | 10 | 00:39:00 - 00:49:00 |  |
| 60 | 10 | 00:49:00 - 00:59:00 | |
| 50 | 10 | 00:59:00 - 01:09:00 | |
| 40 | 15 | 01:09:00 - 01:24:00 | |
| 30 | 25 | 01:24:00 - 01:49:00 | |
| 20 | 25 | 01:49:00 - 02:14:00 | |
| 10 | 25 | 02:14:00 - 02:39:00 | |
| 10 | 20 | 02:39:00 - 02:59:00 | |
| 10-0 | 10 | 02:59:00 - 03:09:00 | |

Times at the decompression stops include the time required for travel to next stop.

Table 12

INITIAL SCHEDULE SUMMARY 350-FOOT/15-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|----------|----------------|-----------------------------|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 1 | 1 Jun 67 | Kennedy Wyatt | HeO ₂ 85%/15% | 33.5 33.5 | 00:06:15 | 03:09:00 | No |
| 2 | 2 Jun 67 | Mandible Jones | HeO ₂ 85%/15% | Not Recorded | 00:06:30 | 03:09:00 | No |

3.4.2 Problems/Modifications

Only two dives were made in this group, both on the initial schedule. One minor deviation from schedule occurred on Dive 1 when divers remained one minute at 170 feet on ascent. This put them one minute behind schedule upon reaching 140 feet. The stop at 140 feet was shortened one minute and the schedule resumed. Otherwise, both dives adhered to the schedule. No problems were encountered on either dive.

The initial schedule, unmodified, appears as the final schedule for this dive group as Table A-4 in Appendix A.

3.5 350-FOOT/30-MINUTE DIVES

3.5.1 Initial Decompression Schedule

The initial decompression schedule for this dive group is presented in Table 13 and a summary of the dives conducted using this schedule is presented in Table 14.

Table 13
INITIAL SCHEDULE - 350-FOOT/30-MINUTE

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|------------------|
| 0-50 | 1 | 00:00:00 - 00:01:00 | Air |
| 50-125 | 1 | 00:01:00 - 00:02:00 | ↓ |
| 125-200 | 1 | 00:02:00 - 00:03:00 | HeO ₂ |
| 200-275 | 1 | 00:03:00 - 00:04:00 | 87/13 |
| 275-350 | 1 | 00:04:00 - 00:05:00 | ↓ |
| 350 | 25 | 00:05:00 - 00:30:00 | |
| 350-290 | 1 | 00:30:00 - 00:31:00 | |
| 290-230 | 1 | 00:31:00 - 00:32:00 | |
| 230-180 | 1 | 00:32:00 - 00:33:00 | ↓ |
| 180 | 1 | 00:33:00 - 00:34:00 | HeO ₂ |
| 175 | 1 | 00:34:00 - 00:35:00 | 80/20 |
| 170 | 1 | 00:35:00 - 00:36:00 | ↓ |
| 165 | 1 | 00:36:00 - 00:37:00 | |
| 160 | 1 | 00:37:00 - 00:38:00 | |
| 155 | 1 | 00:38:00 - 00:39:00 | |
| 150 | 2 | 00:39:00 - 00:41:00 | |
| 145 | 2 | 00:41:00 - 00:43:00 | |
| 140 | 2 | 00:43:00 - 00:45:00 | |
| 135 | 2 | 00:45:00 - 00:47:00 | |
| 130 | 2 | 00:47:00 - 00:49:00 | |
| 125 | 2 | 00:49:00 - 00:51:00 | |
| 120 | 2 | 00:51:00 - 00:53:00 | |
| 115 | 2 | 00:53:00 - 00:55:00 | ↓ |
| 110 | 5 | 00:55:00 - 01:00:00 | Air |
| 106 | 5 | 01:00:00 - 01:05:00 | ↓ |
| 102 | 5 | 01:05:00 - 01:10:00 | |
| 98 | 5 | 01:10:00 - 01:15:00 | |
| 94 | 5 | 01:15:00 - 01:20:00 | ↓ |

Table 13

INITIAL SCHEDULE - 350-FOOT/30-MINUTE (Continued)

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|-------|
| 90 | 5 | 01:20:00 - 01:25:00 | Air |
| 86 | 5 | 01:25:00 - 01:30:00 | |
| 82 | 5 | 01:30:00 - 01:35:00 | |
| 78 | 5 | 01:35:00 - 01:40:00 | |
| 74 | 5 | 01:40:00 - 01:45:00 | |
| 70 | 5 | 01:45:00 - 01:50:00 | |
| 68 | 5 | 01:50:00 - 01:55:00 | |
| 66 | 5 | 01:55:00 - 02:00:00 | |
| 64 | 5 | 02:00:00 - 02:05:00 | |
| 62 | 5 | 02:05:00 - 02:10:00 | |
| 60 | 5 | 02:10:00 - 02:15:00 | |
| 58 | 5 | 02:15:00 - 02:20:00 | |
| 56 | 5 | 02:20:00 - 02:25:00 | |
| 54 | 5 | 02:25:00 - 02:30:00 | |
| 52 | 5 | 02:30:00 - 02:35:00 | |
| 50 | 5 | 02:35:00 - 02:40:00 | |
| 48 | 5 | 02:40:00 - 02:45:00 | |
| 46 | 5 | 02:45:00 - 02:50:00 | |
| 44 | 5 | 02:50:00 - 02:55:00 | |
| 42 | 5 | 02:55:00 - 03:00:00 | |
| 40 | 8 | 03:00:00 - 03:08:00 | |
| 38 | 8 | 03:08:00 - 03:16:00 | |
| 36 | 8 | 03:16:00 - 03:24:00 | |
| 34 | 8 | 03:24:00 - 03:32:00 | |
| 32 | 8 | 03:32:00 - 03:40:00 | |
| 30 | 16 | 03:40:00 - 03:56:00 | |
| 28 | 16 | 03:56:00 - 04:12:00 | |
| 26 | 16 | 04:12:00 - 04:28:00 | |
| 24 | 16 | 04:28:00 - 04:44:00 | |
| 22 | 16 | 04:44:00 - 05:00:00 | |
| 20 | 18 | 05:00:00 - 05:18:00 | 02 |
| 18 | 18 | 05:18:00 - 05:36:00 | ↓ |
| 16 | 18 | 05:36:00 - 05:54:00 | Air |
| 14 | 18 | 05:54:00 - 06:12:00 | ↓ |
| 12 | 18 | 06:12:00 - 06:30:00 | 02 |
| 10 | 18 | 06:30:00 - 06:48:00 | |

Table 13

INITIAL SCHEDULE - 350-FOOT/30-MINUTE (Continued)

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|----------------|
| 10 | 30 | 06:40:00 - 07:18:00 | Air |
| 10 | 30 | 07:18:00 - 07:48:00 | O ₂ |
| 10 | 30 | 07:48:00 - 08:18:00 | Air |
| 10 | 30 | 08:18:00 - 08:48:00 | O ₂ |
| 10 | 30 | 08:48:00 - 09:18:00 | Air |
| 10 | 20 | 09:18:00 - 09:38:00 | O ₂ |
| 10-0 | 10 | 09:38:00 - 09:48:00 | O ₂ |

Times at the decompression stops include the time required for travel to next stop.

Table 14

INITIAL SCHEDULE SUMMARY 350-FOOT/30-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|------------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 1 | 21 Apr 66 | Parkinson Lazaro | HeO ₂ 87%/13% 80%/20% | Not Recorded | 00:05:14 | 09:48:00 | No |
| 2 | 22 Sep 66 | Casse Reedy | HeO ₂ 87%/13% 80%/20% | Not Recorded | 00:05:10 | 09:48:00 | No |

3.5.2 Problems/Modifications

Both dives under this schedule were conducted without incident. Dive 1 conformed to schedule except for minor variations in rates of travel on descent and in the interval between 180 feet and 170 feet on ascent.

Dive 2 used faster rates of travel between decompression stops in the interval between 180 feet and 30 feet than prescribed in the schedule. The rates are compared as follows:

| Depth Intervals (Feet) | Rates of Travel Between Stops (Feet per minute) | |
|---------------------------|--|---------------|
| | <u>Initial Schedule</u> | <u>Dive 2</u> |
| 180-110 | 15 | 30 |
| 110- 70 | 12 | 30 |
| 70- 30 | 6 | 12 |

The available records for Dive 2 are incomplete. They indicate that the dive was completed on time with both divers "OK". However, the schedule details for the interval between 30 feet and the surface were not recorded. Except for the rates of travel, Dive 2 followed the initial schedule to the 30-foot depth at elapsed time 03:40:00.

The initial schedule appears, unmodified, as the final schedule for this dive group as Table A-5 in Appendix A.

3.6.1 Initial Decompression Schedule

Table 15

INITIAL SCHEDULE 350-FOOT/60-MINUTE

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|------------------|
| 0-50 | 1 | 00:00:00 - 00:01:00 | HeO ₂ |
| 50-350 | 4 | 00:01:00 - 00:05:00 | 87/13 |
| 350 | 55 | 00:05:00 - 01:00:00 | ↓ |
| 350-200 | 2 | 01:00:00 - 01:02:00 | HeO ₂ |
| 200 | 4 | 01:02:00 - 01:06:00 | 80/20 |
| 200-170 | 1 | 01:06:00 - 01:07:00 | ↓ |
| 170 | 4 | 01:07:00 - 01:11:00 | |
| 170-160 | 1 | 01:11:00 - 01:12:00 | |
| 160 | 4 | 01:12:00 - 01:16:00 | |
| 160-150 | 1 | 01:16:00 - 01:17:00 | |
| 150 | 4 | 01:17:00 - 01:21:00 | |
| 150-140 | 1 | 01:21:00 - 01:22:00 | |
| 140 | 4 | 01:22:00 - 01:26:00 | |
| 140-130 | 1 | 01:26:00 - 01:27:00 | |
| 130 | 4 | 01:27:00 - 01:31:00 | |
| 130-120 | 1 | 01:31:00 - 01:32:00 | |
| 120 | 9 | 01:32:00 - 01:41:00 | |
| 120-110 | 1 | 01:41:00 - 01:42:00 | |
| 110 | 9 | 01:42:00 - 01:51:00 | |
| 110-100 | 1 | 01:51:00 - 01:52:00 | |
| 100 | 9 | 01:52:00 - 02:01:00 | |
| 100- 90 | 1 | 02:01:00 - 02:02:00 | |
| 90 | 14 | 02:02:00 - 02:16:00 | |
| 90-80 | 1 | 02:16:00 - 02:17:00 | |
| 80 | 14 | 02:17:00 - 02:31:00 | |
| 80-70 | 1 | 02:31:00 - 02:32:00 | |
| 70 | 20 | 02:32:00 - 02:52:00 | |
| 70-60 | 5 | 02:52:00 - 02:57:00 | |
| 60 | 25 | 02:57:00 - 03:22:00 | |
| 60-50 | 5 | 03:22:00 - 03:27:00 | |
| 50 | 15 | 03:27:00 - 03:42:00 | |
| 150-45 | 5 | 03:42:00 - 03:47:00 | |
| 45 | 25 | 03:47:00 - 04:12:00 | ↓ |
| | | | Air |

Table 15

INITIAL SCHEDULE 350-FOOT/60-MINUTE (Continued)

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|----------------|
| 45-40 | 5 | 04:12:00 - 04:17:00 | Air |
| 40 | 30 | 04:17:00 - 04:47:00 | ↓ |
| 40-35 | 5 | 04:47:00 - 04:52:00 | ↓ |
| 35 | 25 | 04:52:00 - 05:17:00 | O ₂ |
| 35-30 | 5 | 05:17:00 - 05:22:00 | ↓ |
| 30 | 55 | 05:22:00 - 06:17:00 | Air |
| 30-25 | 5 | 06:17:00 - 06:22:00 | ↓ |
| 25 | 25 | 06:22:00 - 06:47:00 | O ₂ |
| 25-20 | 5 | 06:47:00 - 06:52:00 | ↓ |
| 20 | 85 | 06:52:00 - 08:17:00 | Air |
| 20-15 | 5 | 08:17:00 - 08:22:00 | ↓ |
| 15 | 40 | 08:22:00 - 09:02:00 | O ₂ |
| 15-10 | 5 | 09:02:00 - 09:07:00 | ↓ |
| 10 | 30 | 09:07:00 - 09:37:00 | Air |
| 10 | 30 | 09:37:00 - 10:07:00 | O ₂ |
| 10 | 30 | 10:07:00 - 10:37:00 | Air |
| 10 | 30 | 10:37:00 - 11:07:00 | O ₂ |
| 10 | 30 | 11:07:00 - 11:37:00 | Air |
| 10 | 20 | 11:37:00 - 11:57:00 | O ₂ |
| 10-0 | 10 | 11:57:00 - 12:07:00 | O ₂ |

Travel times are shown as separate entries throughout the schedule.

Table 16

INITIAL SCHEDULE SUMMARY 350-FOOT/60-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|-----------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 1 | 14 Oct 65 | Garrahan Bigger | HeO ₂ 87%/13% 80%/20% | Not Recorded | 00:05:10 | 13:28:30 | Garrahan |

3.6.2 Problems/Modifications

Garrahan experienced decompression sickness on Dive 1 which was conducted on the initial schedule. He reported "inkle, left knee" at 15 feet. He was successfully recompressed with relief of symptoms at 30 feet. Bigger accompanied the treatment. The treatment period extended the total time of dive to 13:28:30 as compared to the scheduled 12:07:00.

The initial schedule included relatively long stops at 10-foot increments up to 50 feet. The distance between stops was then decreased to 5 feet between the 50-foot depth and the 10-foot depth. The number of decompression stops was significantly increased in Modification A Schedule. Five-foot intervals were used between 200 feet and 120 feet. Two-foot intervals were used between 120 feet and 10 feet. The total time of dive in the Modification A Schedule was extended slightly to 12:13:00 as compared to 12:07:00 in the initial schedule.

Brauner experienced decompression sickness on Dive 2 which was conducted on Modification A Schedule. He felt a twinge in his left knee at 32 feet. He was returned to 50 feet where all symptoms were relieved. Anderson accompanied the treatment. Seven decompression stops between 195 feet and 98 feet varied one minute each from schedule. These deviations and the treatment period for Brauner extended the total time of dive to 13:55:20 as compared to the scheduled 12:13:00.

Modification B Schedule extended the total time of dive to 14:12:00. This was done primarily by slightly increasing the length of decompression stops between 70 feet and 10 feet as compared to those in Modification A Schedule. Dives conducted under Modification A Schedule and Modification B Schedule are summarized in Tables 17 and 18. These two modified schedules are quite similar in their basic construction; they are compared in detail in Table 19.

Dive 3 adhered to Modification B Schedule. Descent to 75 feet was 40 seconds behind schedule, accounting for the delay in reaching bottom. Mullens developed a rash on his back and stomach at 70 feet on ascent. He was given O₂ for 20 minutes, the rash disappearing completely during that time. Both he and Sundstrom continued the schedule during and after treatment, finishing at the scheduled time of 14:12:00.

Modification B Schedule is presented as the final schedule for this dive group as Table A-6 in Appendix A.

Table 17

MODIFICATION A SCHEDULE SUMMARY 350-FOOT/60-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|------------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 2 | 14 Apr 66 | Anderson Brauner | HeO ₂ 87%/13% 80%/20% | Not Recorded | 00:06:07 | 13:55:20 | Brauner |

Table 18

MODIFICATION B SCHEDULE SUMMARY 350-FOOT/60-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|------------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 3 | 26 Apr 66 | Mullen Sundstrom | HeO ₂ 87%/13% 80%/20% | Not Recorded | 00:05:50 | 14:12:00 | Mullen |

Table 19

MODIFICATION SCHEDULE COMPARISONS 350-FOOT/60-MINUTE

| Depth (ft) | | Time (min) | | Breathing Mixture | |
|------------|---------|------------|-------|-------------------|------------------|
| Schedule | | Schedule | | Schedule | |
| Mod A | Mod B | Mod A | Mod B | Mod A | Mod B |
| 0-120 | 0-125 | 2 | 2 | Air | Air |
| 120 | 125 | 0.5 | 0.5 | HeO ₂ | HeO ₂ |
| 120-350 | 125-350 | 3.5 | 3.5 | 87/13 | 87/13 |
| | 350 | 54 | 54 | ↓ | ↓ |
| | 350-250 | 2 | 2 | HeO ₂ | HeO ₂ |
| | 250-200 | 1 | 1 | 80/20 | 80/20 |
| | 200 | 2 | 1 | ↓ | ↓ |
| | 195 | 2 | 1 | | |
| | 190 | 2 | 1 | | |
| | 185 | 2 | 1 | | |
| | 180 | 2 | 1 | | |
| | 175 | 2 | 1 | | |
| | 170 | 2 | 1 | | |
| | 165 | 2 | 1 | | |
| | 160 | 2 | 2 | | |
| -- | 156 | -- | 2 | | |
| 155 | -- | 2 | -- | | |
| -- | 152 | -- | 2 | | |
| 150 | -- | 2 | -- | | |
| -- | 148 | -- | 2 | | |
| 145 | -- | 2 | -- | | |
| -- | 144 | -- | 2 | | |
| 140 | 140 | 2 | 2 | | |
| -- | 136 | -- | 2 | | |
| 135 | -- | 2 | -- | | |
| -- | 132 | -- | 2 | | |
| 130 | 130 | 2 | 2 | | |
| -- | 128 | -- | 2 | | |
| -- | 126 | -- | 2 | | |
| -- | 124 | -- | 2 | | |
| -- | 122 | -- | 2 | | |

Table 19

MODIFICATION SCHEDULE COMPARISONS 350-FOOT/60-MINUTE
(Continued)

| Depth(ft) | | Time(min) | | Breathing Mixture | |
|-----------|-------|-----------|-------|-------------------|-------|
| Schedule | | Schedule | | Schedule | |
| Mod A | Mod B | Mod A | Mod B | Mod A | Mod B |
| 120 | | 2 | 2 | He02 | He02 |
| 118 | | 2 | 2 | 80/20 | 80/20 |
| 116 | | 2 | 2 | ↓ | ↓ |
| 114 | | 2 | 2 | | |
| 112 | | 2 | 2 | | |
| 110 | | 2 | 2 | | |
| 108 | | 2 | 2 | | |
| 106 | | 2 | 2 | | |
| 104 | | 2 | 2 | | |
| 102 | | 2 | 2 | | |
| 100 | | 2 | 3 | | Air |
| 98 | | 2 | 3 | | ↓ |
| 96 | | 2 | 3 | | |
| 94 | | 2 | 3 | | |
| 92 | | 2 | 3 | | |
| 90 | | 3 | 3 | | |
| 88 | | 3 | 3 | | |
| 86 | | 3 | 3 | | |
| 84 | | 3 | 3 | | |
| 82 | | 3 | 3 | | |
| 80 | | 3 | 3 | | |
| 78 | | 3 | 3 | | |
| 76 | | 3 | 3 | | |
| 74 | | 3 | 3 | | |
| 72 | | 3 | 3 | | |
| 70 | | 8 | 10 | ↓ | ↓ |
| 68 | | 8 | 10 | | |
| 66 | | 8 | 10 | | |
| 64 | | 8 | 10 | | |
| 62 | | 8 | 10 | | |
| 60 | | 8 | 10 | | |
| 58 | | 8 | 10 | | |
| 56 | | 8 | 10 | | |

Table 19
MODIFICATION SCHEDULE COMPARISONS 350-FOOT/60-MINUTE
(Continued)

| Depth (ft) | | Time (min) | | Breathing Mixture | |
|------------|-------|------------|-------|-------------------|-------|
| Schedule | | Schedule | | Schedule | |
| Mod A | Mod B | Mod A | Mod B | Mod A | Mod B |
| 54 | | 8 | 10 | Air | Air |
| 52 | | 8 | 10 | | |
| 50 | | 8 | 10 | | |
| 48 | | 8 | 10 | | |
| 46 | | 8 | 10 | | |
| 44 | | 8 | 10 | | |
| 42 | | 8 | 10 | | |
| 40 | | 14 | 21 | | |
| 38 | | 14 | 21 | | |
| 36 | | 14 | 21 | | |
| 34 | | 14 | 21 | | |
| 32 | | 14 | 21 | | |
| 30 | | 18 | 21 | | |
| 28 | | 18 | 21 | | |
| 26 | | 18 | 21 | | |
| 24 | | 18 | 21 | | |
| 22 | | 18 | 21 | | |
| 20 | | 24 | 30 | 02 | 02 |
| 18 | | 24 | 30 | Air | Air |
| 16 | | 24 | 30 | 02 | 02 |
| 14 | | 24 | 30 | Air | Air |
| 12 | | 24 | 30 | 02 | 02 |
| 10 | | 30 | 30 | Air | Air |
| 10 | | 30 | 30 | 02 | 02 |
| 10 | | 30 | 30 | Air | Air |
| 10 | | 30 | 30 | 02 | 02 |
| 10 | | 30 | 30 | Air | Air |
| 10 | | 20 | 20 | 02 | 02 |
| 10-0 | | 10 | 10 | 02 | 02 |

TOTAL ELAPSED TIME:

Initial Schedule
Modification A Schedule
Modification B Schedule

12:07:00
12:13:00
14:12:00

3.7 400-FOOT/15-MINUTE DIVES

3.7.1 Initial Decompression Schedule

The initial decompression schedule for this dive group is presented in Table 20 and the summary of dives conducted under this schedule is presented in Table 21.

Table 20

INITIAL SCHEDULE 400-FOOT/15-MINUTE

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|-------|
| 0-75 | 1 | 00:00:00 - 00:01:00 | Air |
| 75 | 1 | 00:01:00 - 00:02:00 | He02 |
| 75-400 | 4 | 00:02:00 - 00:06:00 | 90/10 |
| 400 | 10 | 00:06:00 - 00:15:00 | |
| 400-220 | 3 | 00:15:00 - 00:18:00 | |
| 220-190 | 1 | 00:18:00 - 00:19:00 | |
| 190 | 1 | 00:19:00 - 00:20:00 | |
| 180 | 1 | 00:20:00 - 00:21:00 | |
| 170 | 2 | 00:21:00 - 00:23:00 | |
| 160 | 2 | 00:23:00 - 00:25:00 | |
| 150 | 2 | 00:25:00 - 00:27:00 | |
| 140 | 2 | 00:27:00 - 00:29:00 | |
| 130 | 2 | 00:29:00 - 00:31:00 | |
| 120 | 5 | 00:31:00 - 00:36:00 | |
| 110 | 5 | 00:36:00 - 00:41:00 | |
| 100 | 5 | 00:41:00 - 00:46:00 | Air |
| 90 | 5 | 00:46:00 - 00:51:00 | |
| 80 | 10 | 00:51:00 - 01:01:00 | |
| 70 | 10 | 01:01:00 - 01:11:00 | |
| 60 | 15 | 01:11:00 - 01:26:00 | |
| 50 | 15 | 01:26:00 - 01:41:00 | |
| 40 | 25 | 01:41:00 - 02:06:00 | 02 |
| 30 | 25 | 02:06:00 - 02:31:00 | Air |
| 20 | 25 | 02:31:00 - 02:56:00 | 02 |
| 20 | 25 | 02:56:00 - 03:21:00 | Air |
| 10 | 30 | 03:21:00 - 03:51:00 | 02 |
| 10 | 30 | 03:51:00 - 04:21:00 | Air |
| 10 | 20 | 04:21:00 - 04:41:00 | 02 |
| 10-0 | 10 | 04:41:00 - 04:51:00 | 02 |

Times at decompression stop include the time required for travel to next stop.

Table 21

INITIAL SCHEDULE SUMMARY 400-FOOT/15-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|----------|----------------|-----------------------------|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 1 | 5 Jun 67 | Mullen Mulally | HeO ₂ 90%/10% | Not Recorded | 00:07:40 | 04:51:00 | No |
| 2 | 6 Jun 67 | Rudin Meeks | HeO ₂ 90%/10% | 35.0 37.0 | 00:08:13 | 04:52:00 | Rudin Meeks |

3.7.2 Problems/Modifications

During descent on Dives 1 and 2, divers were held at the 75-foot depth and then descended to the bottom depth more slowly than prescribed in the schedule. This extended the descent times as indicated in Table 21. Mullen, on Dive 1, reported that the "gas seemed real hot" on the way down. He experienced dizziness and a little nausea upon reaching bottom depth. This cleared up when the system was purged. His clamshell helmet was apparently leaking air on descent.

During ascent on Dive 2, O₂ pressure was lost for 40 seconds at the 10-foot depth. The 30-minute O₂ stop at this depth was extended 1 minute as a result. This increased the total time of Dive 2 to 04:52:00.

Both Rudin and Meeks experienced decompression sickness after Dive 2. Symptoms began 1-1/2 hours after returning to surface. Rudin had pain in the right knee. Meeks had pain in both knees and a sore right thigh. They were both successfully treated with recompression.

As a result of the experience on Dive 2, the schedule was changed radically for Dives 3 and 4. The total time of dive was extended 3 hours, primarily by increasing the time periods on O₂ and Air at the 10-foot depth. A mixture of 80% - 20% HeO₂ was also used in addition to 90% 10% HeO₂. Dives 3 and 4 adhered to the revised schedule (Modification A Schedule) except for the final ascent from 10 feet to the surface. Only 10 seconds were scheduled for this ascent. Dive 2 required 1 minute for this ascent and Dive 4 required 1 minute 40 seconds. This accounts for the small increase in the total time of dive for these two dives as compared to the scheduled time of 07:51:10.

Pratt suffered decompression sickness after surfacing from Dive 4, experiencing pain in his right leg. He was successfully treated with recompression.

The two dives using Modification A Schedule are summarized in Table 22. This schedule is compared in detail with the initial schedule in Table 23. Modification A Schedule appears as the final schedule for this dive group as Table A-7 in Appendix A.

Table 22

MODIFICATION A SCHEDULE SUMMARY 400-FOOT/15-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|-----------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 3 | 14 Jun 67 | May Cato | HeO ₂ 90%/10% 80%/20% | 34.0 36.5 | 00:05:15 | 07:51:45 | No |
| 4 | 15 Jun 67 | Pratt Sundstrom | HeO ₂ 90%/10% 80%/20% | 34.5 36.0 | 00:04:45 | 07:52:40 | Pratt |

Table 23

SCHEDULE COMPARISONS 400-FOOT/15-MINUTE

| Depth (ft) | | Time (min) | | Breathing Mixture | |
|------------|---------|------------|-------|-------------------|------------------|
| Schedule | | Schedule | | Schedule | |
| Init. | Mod A | Init. | Mod A | Init. | Mod A |
| 0-75 | 0-100 | 1 | 1 | Air | Air |
| - - | 100 | - - | 0.5 | - - | HeO ₂ |
| 75-400 | 100-400 | 4 | 4 | HeO ₂ | 90/10 |
| 400 | 400 | 10 | 9.5 | 90/10 | ↓ |
| 400-220 | 400-220 | 3 | 3 | | HeO ₂ |
| 220-190 | 220-200 | 1 | 1 | | 80/20 |
| - - | 200 | - - | 1 | | ↓ |
| | 190 | 1 | 1 | | |
| | 180 | 1 | 1 | | |
| | 170 | 2 | 2 | | |
| | 160 | 2 | 1 | | |
| | 150 | 2 | 2 | | |
| | 140 | 2 | 2 | | |
| | 130 | 2 | 2 | | |
| | 120 | 5 | 5 | | |
| | 110 | 5 | 5 | | |
| | 100 | 5 | 5 | Air | Air |
| | 90 | 5 | 5 | ↓ | ↓ |
| | 80 | 10 | 15 | | |
| | 70 | 10 | 10 | | |
| | 60 | 15 | 15 | | |
| | 50 | 15 | 15 | | |
| | 40 | 25 | 35 | O ₂ | ↓ |
| | 30 | 25 | 30 | Air | O ₂ |
| | 20 | 25 | 15 | O ₂ | Air |
| | 20 | 25 | 15 | Air | Air |

Table 23

SCHEDULE COMPARISONS 400-FOOT/15-MINUTE (Continued)

| Depth (ft) | | Time (min) | | Breathing Mixture | |
|------------|-------|------------|-------|-------------------|----------------|
| Schedule | | Schedule | | Schedule | |
| Init. | Mod A | Init. | Mod A | Init. | Mod A |
| - - | 20 | - - | 30 | - - | Air |
| - - | 20 | - - | 30 | - - | O ₂ |
| - - | 10 | - - | 30 | - - | Air |
| - - | 10 | - - | 30 | - - | O ₂ |
| - - | 10 | - - | 30 | - - | Air |
| | 10 | 30 | 10 | O ₂ | O ₂ |
| | 10 | 30 | 10 | Air | Air |
| | 10 | 20 | 10 | O ₂ | O ₂ |
| | 10-0 | 10 | 0.17 | O ₂ | O ₂ |

TOTAL ELAPSED TIME:

Initial Schedule 04:51:00
Modification A 07:51:00

3.8 400-FOOT/30-MINUTE DIVES

3.8.1 Initial Decompression Schedule

The initial decompression schedule for this dive group is presented in Table 24 and the summary of dives conducted under this schedule is presented in Table 25.

Table 24

INITIAL SCHEDULE 400-FOOT/30-MINUTE

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|---------------------------------------|
| 0-100 | 2 | 00:00:00 - 00:02:00 | Air HeO ₂ 90/10 ↓ |
| 100 | 0.5 | 00:02:00 - 00:02:30 | |
| 100-400 | 3 | 00:02:30 - 00:05:30 | |
| 400 | 24.5 | 00:05:30 - 00:30:00 | |
| 400-340 | 1 | 00:30:00 - 00:31:00 | HeO ₂ 80/20 ↓ |
| 340-280 | 1 | 00:31:00 - 00:32:00 | |
| 280-220 | 1 | 00:32:00 - 00:33:00 | |
| 220 | 1 | 00:33:00 - 00:34:00 | |
| 215 | 1 | 00:34:00 - 00:35:00 | |
| 210 | 1 | 00:35:00 - 00:36:00 | |
| 205 | 1 | 00:36:00 - 00:37:00 | |
| 200 | 1 | 00:37:00 - 00:38:00 | |
| 195 | 1 | 00:38:00 - 00:39:00 | |
| 190 | 1 | 00:39:00 - 00:40:00 | |
| 185 | 1 | 00:40:00 - 00:41:00 | |
| 180 | 2 | 00:41:00 - 00:43:00 | |
| 175 | 2 | 00:43:00 - 00:45:00 | |
| 170 | 2 | 00:45:00 - 00:47:00 | |
| 165 | 2 | 00:47:00 - 00:49:00 | |
| 160 | 2 | 00:49:00 - 00:51:00 | |
| 155 | 2 | 00:51:00 - 00:53:00 | |
| 150 | 2 | 00:53:00 - 00:55:00 | |
| 145 | 2 | 00:55:00 - 00:57:00 | |
| 140 | 4 | 00:57:00 - 01:01:00 | |
| 135 | 4 | 00:01:00 - 01:05:00 | |
| 130 | 4 | 01:05:00 - 01:09:00 | |
| 125 | 4 | 01:09:00 - 01:13:00 | |
| 120 | 4 | 01:13:00 - 01:17:00 | |
| 115 | 4 | 01:17:00 - 01:21:00 | |
| 110 | 4 | 01:21:00 - 01:25:00 | |
| 105 | 4 | 01:25:00 - 01:29:00 | |

Table 24

INITIAL SCHEDULE 400-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------|
| 100 | 3 | 01:29:00 - 01:32:00 | Air ↓ |
| 98 | 3 | 01:32:00 - 01:35:00 | |
| 96 | 3 | 01:35:00 - 01:38:00 | |
| 94 | 3 | 01:38:00 - 01:41:00 | |
| 92 | 3 | 01:41:00 - 01:44:00 | |
| 90 | 3 | 01:44:00 - 01:47:00 | |
| 88 | 3 | 01:47:00 - 01:50:00 | |
| 86 | 3 | 01:50:00 - 01:53:00 | |
| 84 | 3 | 01:53:00 - 01:56:00 | |
| 82 | 3 | 01:56:00 - 01:59:00 | |
| 80 | 4 | 01:59:00 - 02:03:00 | |
| 78 | 4 | 02:03:00 - 02:07:00 | |
| 76 | 4 | 02:07:00 - 02:11:00 | |
| 74 | 4 | 02:11:00 - 02:15:00 | |
| 72 | 4 | 02:15:00 - 02:19:00 | |
| 70 | 4 | 02:19:00 - 02:23:00 | |
| 68 | 4 | 02:23:00 - 02:27:00 | |
| 66 | 4 | 02:27:00 - 02:31:00 | |
| 64 | 4 | 02:31:00 - 02:35:00 | |
| 62 | 4 | 02:35:00 - 02:39:00 | |
| 60 | 6 | 02:39:00 - 02:45:00 | |
| 58 | 6 | 02:45:00 - 02:51:00 | |
| 56 | 6 | 02:51:00 - 02:57:00 | |
| 54 | 6 | 02:57:00 - 03:03:00 | |
| 52 | 6 | 03:03:00 - 03:09:00 | |
| 50 | 8 | 03:09:00 - 03:17:00 | |
| 48 | 8 | 03:17:00 - 03:25:00 | |
| 46 | 8 | 03:25:00 - 03:33:00 | |
| 44 | 8 | 03:33:00 - 03:41:00 | |
| 42 | 8 | 03:41:00 - 03:49:00 | |
| 40 | 16 | 03:49:00 - 04:05:00 | |
| 38 | 16 | 04:05:00 - 04:21:00 | |
| 36 | 16 | 04:21:00 - 04:37:00 | |
| 34 | 16 | 04:37:00 - 04:53:00 | |
| 32 | 16 | 04:53:00 - 05:09:00 | |
| 30 | 20 | 05:09:00 - 05:29:00 | |
| 28 | 20 | 05:29:00 - 05:49:00 | |
| 26 | 20 | 05:49:00 - 06:09:00 | |
| 24 | 20 | 06:09:00 - 06:29:00 | |
| 22 | 20 | 06:29:00 - 06:49:00 | |

Table 24

Initial Schedule 400-FOOT/30-MINUTE (Continued)

| Depth(ft) | Time(min) | ELapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|-------|
| 20 | 26 | 06:49:00 - 07:14:00 | 02 |
| 18 | 25 | 07:14:00 - 07:39:00 | Air |
| 16 | 25 | 07:39:00 - 08:04:00 | 02 |
| 14 | 25 | 08:04:00 - 08:29:00 | Air |
| 12 | 25 | 08:29:00 - 08:54:00 | 02 |
| 10 | 30 | 08:54:00 - 09:24:00 | Air |
| 10 | 30 | 09:24:00 - 09:54:00 | 02 |
| 10 | 30 | 09:54:00 - 10:24:00 | Air |
| 10 | 30 | 10:24:00 - 10:54:00 | 02 |
| 10 | 30 | 10:54:00 - 11:24:00 | Air |
| 10 | 20 | 11:24:00 - 11:44:00 | 02 |
| 10-0 | 10 | 11:44:00 - 11:54:00 | 02 |

Times at the decompression stops include the time required for travel to the next stop.

Table 25
INITIAL SCHEDULE SUMMARY 400-FOOT/30-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|-----------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 1 | 3 May 66 | Rudin Buckner | HeO ₂ 90%/10% 80%/20% | Not Recorded | 00:06:02 | 11:54:00 | No |
| 2 | 5 May 66 | Kennedy Mulally | HeO ₂ 90%/10% 80%/20% | Not Recorded | 00:06:22 | 11:54:30 | No |
| 3 | 27 Sep 66 | Taylor Stubbs | HeO ₂ 90%/10% 80%/20% | Not Recorded | 00:06:20 | 11:54:15 | No |
| 4 | 29 Sep 66 | Donaldson Casse | HeO ₂ 90%/10% 80%/20% | Not Recorded | 00:07:55 | 11:54:00 | No |

3.8.2 Problems/Modifications

All four dives in this group were executed using the initial schedule. Kennedy, Stubbs, and Donaldson experienced ear trouble on descent during Dives 2, 3, and 4 respectively. Descent time was extended briefly on these dives for this reason. Descent was also slow on Dive 1. On Dive 4, divers went on 80%-20% HeO₂ breathing mixture at 340 feet on ascent instead of at 220 feet as scheduled. This added two minutes to the total use of this mixture. In all other aspects all four dives conformed to the schedule and no problems were encountered.

This schedule with minor variations in rates of travel on descent, was also tested in 1968 for use with the Advanced Diving System (ADS-IV). It was first tested with 80%-20% HeO₂ as a breathing mixture throughout the ascent instead of switching to air. Problems were encountered with decompression sickness. It was then tested using Air beginning at 100 feet as presented in Table 24 of this report. Fewer problems were encountered. Details on these ADS-IV tests are contained in U.S. Navy Experimental Diving Unit Research Report 4-70.

The initial schedule appears, unmodified, as the final schedule for this dive group as Table A-8 in Appendix A.

3.9 400-FOOT/60-MINUTE DIVES

3.9.1 Initial Decompression Schedule

The initial decompression schedule for this dive group is presented in Table 26 and the summary of dives conducted using this schedule is presented in Table 27.

Table 26
INITIAL SCHEDULE 400-FOOT/60-MINUTE

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|--|
| 0-50 | 1 | 00:00:00 - 00:01:00 | Air ↓ HeO ₂ 90/10 ↓ HeO ₂ 80/20 ↓ |
| 50-100 | 1 | 00:01:00 - 00:02:00 | |
| 100-200 | 1 | 00:02:00 - 00:03:00 | |
| 200-300 | 1 | 00:03:00 - 00:04:00 | |
| 300-400 | 1 | 00:04:00 - 00:05:00 | |
| 400 | 55 | 00:05:00 - 01:00:00 | |
| 400-350 | 1 | 01:00:00 - 01:01:00 | |
| 350-300 | 1 | 01:01:00 - 01:02:00 | |
| 300-250 | 1 | 01:02:00 - 01:03:00 | |
| 250 | 3 | 01:03:00 - 01:06:00 | |
| 240 | 3 | 01:06:00 - 01:09:00 | |
| 230 | 3 | 01:09:00 - 01:12:00 | |
| 220 | 3 | 01:12:00 - 01:15:00 | |
| 210 | 3 | 01:15:00 - 01:18:00 | |
| 200 | 7 | 01:18:00 - 01:25:00 | |
| 190 | 7 | 01:25:00 - 01:32:00 | |
| 180 | 7 | 01:32:00 - 01:39:00 | |
| 170 | 7 | 01:39:00 - 01:46:00 | |
| 160 | 7 | 01:46:00 - 01:53:00 | |
| 150 | 2 | 01:53:00 - 01:55:00 | |
| 148 | 2 | 01:55:00 - 01:57:00 | |
| 146 | 2 | 01:57:00 - 01:59:00 | |
| 144 | 2 | 01:59:00 - 02:01:00 | |
| 142 | 2 | 02:01:00 - 02:03:00 | |
| 140 | 2 | 02:03:00 - 02:05:00 | |
| 138 | 2 | 02:05:00 - 02:07:00 | |
| 136 | 2 | 02:07:00 - 02:09:00 | |
| 134 | 2 | 02:09:00 - 02:11:00 | |
| 132 | 2 | 02:11:00 - 02:13:00 | |
| 130 | 2 | 02:13:00 - 02:15:00 | |

Table 26

INITIAL SCHEDULE 400-FOOT/60-MINUTE (Continued)

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|------------------|
| 128 | 2 | 02:15:00 - 02:17:00 | HeO ₂ |
| 126 | 2 | 02:17:00 - 02:19:00 | 80/20 |
| 124 | 2 | 02:19:00 - 02:21:00 | ↓ |
| 122 | 2 | 02:21:00 - 02:23:00 | Air |
| 120 | 4 | 02:23:00 - 02:27:00 | ↓ |
| 118 | 4 | 02:27:00 - 02:31:00 | |
| 116 | 4 | 02:31:00 - 02:35:00 | |
| 114 | 4 | 02:35:00 - 02:39:00 | |
| 112 | 4 | 02:39:00 - 02:43:00 | |
| 110 | 4 | 02:43:00 - 02:47:00 | |
| 108 | 4 | 02:47:00 - 02:51:00 | |
| 106 | 4 | 02:51:00 - 02:55:00 | |
| 104 | 4 | 02:55:00 - 02:59:00 | |
| 102 | 4 | 02:59:00 - 03:03:00 | |
| 100 | 4 | 03:03:00 - 03:07:00 | |
| 98 | 4 | 03:07:00 - 03:11:00 | |
| 96 | 4 | 03:11:00 - 03:15:00 | |
| 94 | 4 | 03:15:00 - 03:19:00 | |
| 92 | 4 | 03:19:00 - 03:23:00 | |
| 90 | 6 | 03:23:00 - 03:29:00 | |
| 88 | 6 | 03:29:00 - 03:35:00 | |
| 86 | 6 | 03:35:00 - 03:41:00 | |
| 84 | 6 | 03:41:00 - 03:47:00 | |
| 82 | 6 | 03:47:00 - 03:53:00 | |
| 80 | 6 | 03:53:00 - 03:59:00 | |
| 78 | 6 | 03:59:00 - 04:05:00 | |
| 76 | 6 | 04:05:00 - 04:11:00 | |
| 74 | 6 | 04:11:00 - 04:17:00 | |
| 72 | 6 | 04:17:00 - 04:23:00 | |
| 70 | 18 | 04:23:00 - 04:41:00 | |
| 68 | 18 | 04:41:00 - 04:59:00 | |
| 66 | 18 | 04:59:00 - 05:17:00 | |
| 64 | 18 | 05:17:00 - 05:35:00 | |
| 62 | 18 | 05:35:00 - 05:53:00 | |
| 60 | 18 | 05:53:00 - 06:11:00 | |
| 58 | 18 | 06:11:00 - 06:29:00 | |
| 56 | 18 | 06:29:00 - 06:47:00 | |
| 54 | 18 | 06:47:00 - 07:05:00 | |
| 52 | 18 | 07:05:00 - 07:23:00 | |
| 50 | 26 | 07:23:00 - 07:49:00 | ↓ |

Table 26

INITIAL SCHEDULE 400-FOOT/60-MINUTE (Continued)

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|----------|
| 48 | 26 | 07:49:00 - 08:15:00 | Air ↓ |
| 46 | 26 | 08:15:00 - 08:41:00 | |
| 44 | 26 | 08:41:00 - 09:07:00 | |
| 42 | 26 | 09:07:00 - 09:33:00 | |
| 40 | 26 | 09:33:00 - 09:59:00 | |
| 38 | 26 | 09:59:00 - 10:25:00 | |
| 36 | 26 | 10:25:00 - 10:51:00 | |
| 34 | 26 | 10:51:00 - 11:17:00 | |
| 32 | 26 | 11:17:00 - 11:43:00 | |
| 30 | 28 | 11:43:00 - 12:11:00 | |
| 28 | 28 | 12:11:00 - 12:39:00 | |
| 26 | 28 | 12:39:00 - 13:07:00 | |
| 24 | 28 | 13:07:00 - 13:35:00 | |
| 22 | 28 | 13:35:00 - 14:03:00 | |
| 20 | 30 | 14:03:00 - 14:33:00 | |
| 18 | 30 | 14:33:00 - 15:03:00 | |
| 16 | 30 | 15:03:00 - 15:33:00 | 02 |
| 14 | 30 | 15:33:00 - 16:03:00 | Air |
| 12 | 30 | 16:03:00 - 16:33:00 | 02 |
| 10 | 30 | 16:33:00 - 17:03:00 | Air |
| 10 | 30 | 17:03:00 - 17:33:00 | 02 |
| 10 | 30 | 17:33:00 - 18:03:00 | Air |
| 10 | 30 | 18:03:00 - 18:33:00 | 02 |
| 10 | 30 | 18:33:00 - 19:03:00 | Air |
| 10 | 20 | 19:03:00 - 19:23:00 | 02 |
| 10-0 | 10 | 19:23:00 - 19:33:00 | 02 |

Times at the decompression stops include the time required for travel to next stop.

Table 27

INITIAL SCHEDULE SUMMARY 400-FOOT/60-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|-------------------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 1 | 12 May 66 | Coffman Hendry | HeO ₂ 90%/10% 80%/20% | Not Recorded | 00:05:15 | 19:33:00 | No |
| 5 | 14 Jul 66 | Mesplay Mulally | HeO ₂ 90%/10% 80%/20% | Not Recorded | 00:07:15 | 19:32:47 | No |
| 6 | 6 Oct 66 | Donaldson Stubbs Mullen | HeO ₂ 90%/10% 80%/20% | Not Recorded | 00:10:45 | 21:38:00 | Donaldson |
| 7 | 18 Oct 66 | Reedy Blackburn Bruneau | HeO ₂ 90%/10% 80%/20% | Not Recorded | 00:07:45 | 19:33:20 | No |

3.9.2 Problems/Modifications

Seven dives were made in this series. Dive 1 was made without incident using the initial schedule. The initial schedule was then shortened from a total time of dive of 19:33:00 to 17:03:00 for Dives 2 and 3 (Modification A Schedule). Decompression sickness occurred on Dive 3. The Modification A Schedule was then increased to 18:18:00 for Dive 4 (Modification B Schedule). Decompression sickness also occurred on Dive 4. As a result of the difficulties encountered with the two modified schedules, use of the initial schedule was resumed for the remaining three dives in the series (Dives 5, 6, 7).

The only problem with decompression sickness on the four dives conducted with the initial schedule occurred on Dive 6. Donaldson reported pain in his left knee and groin at 44 feet. He was successfully recompressed with Stubbs and Mullen accompanying the treatment. Dives 1 and 5 were without incident. On Dive 7, Bruneau and Reedy had some difficulty on the bottom. Bruneau had a foot cramp and Reedy reported "hard time breathing". However, they completed the schedule without incident.

The three dives made with the modified schedules are summarized in Tables 28 and 29.

Bruneau became sick on the bottom on Dive 2. Bottom time was therefore reduced from 60 minutes to 38 minutes 45 seconds. The remainder of Dive 2 was conducted without incident. However, there were 10 variations of one minute each from scheduled times at decompression stops between 200 feet and 32 feet as well as several variations of +30 seconds. These variations produced a cumulative increase of 5 minutes in the total time of dive. Dive 3 was conducted according to schedule; however, Garrahan experienced a slight ache in his right knee within an hour after returning to surface. He was successfully treated with recompression.

Dive 4, conducted on the Modification B Schedule, adhered to this schedule. Lazaro experienced decompression sickness following the dive. He had pain in the front portion of the calf on his left leg. He was successfully treated with recompression commencing 6 hours 24 minutes after the dive.

Table 30 presents a comparison of the initial schedule and the two modified schedules tested for this dive group.

The initial schedule appears unmodified as the final decompression schedule for this dive group as Table A-9 in Appendix A.

Table 28

MODIFICATION A SCHEDULE SUMMARY 400-FOOT/60-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|-------------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 2 | 19 May 66 | Bruneau Sundstrom | HeO ₂ 90%/10% 80%/20% | Not Recorded | 00:05:15 | 16:46:50* | No |
| 3 | 26 May 66 | Garrahan Taylor | HeO ₂ 90%/10% 80%/20% | Not Recorded | 00:05:15 | 17:03:00 | Garrahan |

* Dive 2 had a short bottom time. Subjects began ascent 21 minutes 15 seconds early

Table 29

MODIFICATION B SCHEDULE SUMMARY 400-FOOT/60-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|----------|--------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 4 | 9 Jun 66 | Lazaro Meeks | HeO ₂ 90%/10% 80%/20% | Not Recorded | 00:12:16 | 18:18:25 | Lazaro |

Table 30

SCHEDULE COMPARISONS 400-FOOT/60-MINUTE

| Depth (ft) | Time (min) | | | Breathing Mixture | | |
|------------|------------|-------|-------|-------------------|------------------|------------------|
| Schedule | Schedule | | | Schedule | | |
| All | Init. | Mod A | Mod B | Init. | Mod A | Mod B |
| 0-50 | 1 | 1 | 1 | Air | Air | Air |
| 50-100 | 1 | 1 | 1 | ↓ | ↓ | ↓ |
| 100-200 | 1 | 1 | 1 | HeO ₂ | HeO ₂ | HeO ₂ |
| 200-300 | 1 | 1 | 1 | 90/10 | 90/10 | 90/10 |
| 300-400 | 1 | 1 | 1 | ↓ | ↓ | ↓ |
| 400 | 55 | 55 | 55 | | | |
| 400-350 | 1 | 1 | 1 | | | |
| 350-300 | 1 | 1 | 1 | | | |
| 300-250 | 1 | 1 | 1 | | | |
| 250 | 3 | 3 | 3 | | | |
| 240 | 3 | 3 | 3 | | | |
| 230 | 3 | 3 | 3 | | | |
| 220 | 3 | 3 | 3 | | | |
| 210 | 3 | 3 | 3 | | | |
| 200 | 7 | 7 | 7 | HeO ₂ | HeO ₂ | HeO ₂ |
| 190 | 7 | 7 | 7 | 80/20 | 80/20 | 80/20 |
| 180 | 7 | 7 | 7 | ↓ | ↓ | ↓ |
| 170 | 7 | 7 | 7 | | | |
| 160 | 7 | 7 | 7 | | | |
| 150 | 2 | 2 | 2 | | | |
| 148 | 2 | 2 | 2 | | | |
| 146 | 2 | 2 | 2 | | | |
| 144 | 2 | 2 | 2 | | | |
| 142 | 2 | 2 | 2 | | | |
| 140 | 2 | 2 | 2 | | | |
| 138 | 2 | 2 | 2 | | | |
| 136 | 2 | 2 | 2 | | | |
| 134 | 2 | 2 | 2 | | | |
| 132 | 2 | 2 | 2 | ↓ | ↓ | ↓ |

Table 30

SCHEDULE COMPARISONS 400-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | | | Breathing Mixture | | |
|------------|------------|-------|-------|-------------------|------------------|------------------|
| Schedule | Schedule | | | Schedule | | |
| All | Init. | Mod A | Mod B | Init. | Mod A | Mod B |
| 130 | 2 | 2 | 2 | HeO ₂ | HeO ₂ | HeO ₂ |
| 128 | 2 | 2 | 2 | 80/20 | 80/20 | 80/20 |
| 126 | 2 | 2 | 2 | ↓ | ↓ | ↓ |
| 124 | 2 | 2 | 2 | | | |
| 122 | 2 | 2 | 2 | | | |
| 120 | 4 | 4 | 4 | Air | Air | Air |
| 118 | 4 | 4 | 4 | ↓ | ↓ | ↓ |
| 116 | 4 | 4 | 4 | | | |
| 114 | 4 | 4 | 4 | | | |
| 112 | 4 | 4 | 4 | | | |
| 110 | 4 | 4 | 4 | | | |
| 108 | 4 | 4 | 4 | | | |
| 106 | 4 | 4 | 4 | | | |
| 104 | 4 | 4 | 4 | | | |
| 102 | 4 | 4 | 4 | | | |
| 100 | 4 | 4 | 4 | | | |
| 98 | 4 | 4 | 4 | | | |
| 96 | 4 | 6 | 6 | | | |
| 94 | 4 | 6 | 6 | | | |
| 92 | 4 | 6 | 6 | | | |
| 90 | 6 | 6 | 6 | | | |
| 88 | 6 | 6 | 6 | | | |
| 86 | 6 | 6 | 6 | | | |
| 84 | 6 | 6 | 6 | | | |
| 82 | 6 | 6 | 6 | | | |
| 80 | 6 | 6 | 6 | | | |
| 78 | 6 | 6 | 6 | | | |
| 76 | 6 | 6 | 6 | | | |
| 74 | 6 | 6 | 6 | | | |
| 72 | 6 | 6 | 6 | ↓ | ↓ | ↓ |

Table 30

SCHEDULE COMPARISONS 400-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | | | Breathing Mixture | | |
|------------|------------|-------|-------|-------------------|----------------|----------------|
| Schedule | Schedule | | | Schedule | | |
| All | Init. | Mod A | Mod B | Init. | Mod A | Mod B |
| 70 | 18 | 15 | 15 | Air | Air | Air |
| 68 | 18 | 15 | 15 | | | |
| 66 | 18 | 15 | 15 | | | |
| 64 | 18 | 15 | 15 | | | |
| 62 | 18 | 15 | 15 | | | |
| 60 | 18 | 15 | 15 | | | |
| 58 | 18 | 15 | 15 | | | |
| 56 | 18 | 15 | 15 | | | |
| 54 | 18 | 15 | 15 | | | |
| 52 | 18 | 15 | 15 | | | |
| 50 | 26 | 20 | 20 | | | |
| 48 | 26 | 20 | 20 | | | |
| 46 | 26 | 20 | 20 | | | |
| 44 | 26 | 20 | 20 | | | |
| 42 | 26 | 20 | 20 | | | |
| 40 | 26 | 24 | 25 | | | |
| 38 | 26 | 24 | 25 | | | |
| 36 | 26 | 24 | 25 | | | |
| 34 | 26 | 24 | 25 | | | |
| 32 | 26 | 24 | 25 | | | |
| 30 | 28 | 20 | 30 | | O ₂ | |
| 28 | 28 | 30 | 20 | | Air | O ₂ |
| 26 | 28 | 20 | 30 | | O ₂ | Air |
| 24 | 28 | 30 | 20 | | Air | O ₂ |
| 22 | 28 | 20 | 30 | | O ₂ | Air |
| 20 | 30 | 30 | 30 | O ₂ | Air | O ₂ |
| 18 | 30 | 20 | 30 | Air | O ₂ | Air |
| 16 | 30 | 30 | 30 | O ₂ | Air | O ₂ |
| 14 | 30 | 20 | 30 | Air | O ₂ | Air |
| 12 | 30 | 30 | 30 | O ₂ | Air | O ₂ |

Table 30

SCHEDULE COMPARISONS 400-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | | | Breathing Mixture | | |
|------------|------------|-------|-------|-------------------|----------------|----------------|
| Schedule | Schedule | | | Schedule | | |
| All | Init. | Mod A | Mod B | Init. | Mod A | Mod B |
| 10 | 30 | 20 | 30 | Air | O ₂ | Air |
| 10 | 30 | 40 | 30 | O ₂ | Air | O ₂ |
| 10 | 30 | 20 | 30 | Air | O ₂ | Air |
| 10 | 30 | 40 | 30 | O ₂ | Air | O ₂ |
| 10 | 30 | 10 | 30 | Air | O ₂ | Air |
| 10 | 20 | -- | 20 | O ₂ | -- | O ₂ |
| 10-0 | 10 | 10 | 10 | O ₂ | O ₂ | O ₂ |

TOTAL ELAPSED TIME:

| | |
|------------------|----------|
| Initial Schedule | 19:33:00 |
| Modification A | 17:03:00 |
| Modification B | 18:18:00 |

3.10 450-FOOT/15-MINUTE DIVES

3.10.1 Initial Decompression Schedule

The initial schedule for this dive group is presented in Table 31 and a summary of the dives conducted using this schedule is presented in Table 32.

Table 31
INITIAL SCHEDULE 450-FOOT/15-MINUTE

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|------------------|
| 0-100 | 1 | 00:00:00 - 00:01:00 | Air |
| 100-450 | 4 | 00:01:00 - 00:05:00 | HeO ₂ |
| 450 | 10 | 00:05:00 - 00:15:00 | 90/10 |
| 450-270 | 3 | 00:15:00 - 00:18:00 | |
| 270-230 | 1 | 00:18:00 - 00:19:00 | |
| 230 | 1 | 00:19:00 - 00:20:00 | |
| 220 | 1 | 00:20:00 - 00:21:00 | |
| 210 | 2 | 00:21:00 - 00:23:00 | |
| 200 | 1 | 00:23:00 - 00:24:00 | |
| 190 | 2 | 00:24:00 - 00:26:00 | |
| 180 | 1 | 00:26:00 - 00:27:00 | |
| 170 | 2 | 00:27:00 - 00:29:00 | |
| 160 | 1 | 00:29:00 - 00:30:00 | |
| 150 | 5 | 00:30:00 - 00:35:00 | |
| 140 | 5 | 00:35:00 - 00:40:00 | |
| 130 | 5 | 00:40:00 - 00:45:00 | |
| 120 | 5 | 00:45:00 - 00:50:00 | |
| 110 | 5 | 00:50:00 - 00:55:00 | |
| 100 | 5 | 00:55:00 - 01:00:00 | |
| 90 | 10 | 01:00:00 - 01:10:00 | |
| 80 | 15 | 01:10:00 - 01:25:00 | |
| 70 | 15 | 01:25:00 - 01:40:00 | |
| 60 | 15 | 01:40:00 - 01:55:00 | |
| 50 | 30 | 01:55:00 - 02:25:00 | |
| 40 | 40 | 02:25:00 - 03:05:00 | |
| 30 | 30 | 03:05:00 - 03:35:00 | |
| 30 | 30 | 03:35:00 - 04:05:00 | |
| 30 | 30 | 04:05:00 - 04:35:00 | |
| 20 | 30 | 04:35:00 - 05:05:00 | |
| 20 | 30 | 05:05:00 - 05:35:00 | |

Table 31

INITIAL SCHEDULE 450-FOOT/15-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------------|
| 20 | 30 | 05:35:00 - 06:05:00 | Air |
| 20 | 30 | 06:05:00 - 06:35:00 | O ₂ |
| 10 | 30 | 06:35:00 - 07:05:00 | Air |
| 10 | 30 | 07:05:00 - 07:35:00 | O ₂ |
| 10 | 30 | 07:35:00 - 08:05:00 | Air |
| 10 | 30 | 08:05:00 - 08:35:00 | O ₂ |
| 10 | 85 | 08:35:00 - 10:00:00 | Air |
| 10-0 | 10 Sec | 10:00:00 - 10:00:10 | Air |

Times at the decompression stops include the time required for travel to next stop.

Table 32

INITIAL SCHEDULE SUMMARY 450-FOOT/15-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|----------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 1 | 20 Jun 67 | Harter Mesplay | HeO ₂ 90%/10% 80%/20% | 35.0 34.0 | 00:08:15 | 10:01:20 | No |

3.10.2 Problems/Modifications

Only one dive was conducted in this group as summarized in Table 32. Harter noted some compression arthralgia. Mesplay did not. Very foul compressor air caused some nausea on the air stops. The dive adhered to the initial schedule except in three instances. The initial schedule prescribes 30 minutes at 50 feet on ascent and 40 minutes at 40 feet. The 50-foot stop was reduced 5 minutes and the 40-foot stop was increased 5 minutes. The initial schedule prescribes 10:00:10 for the total time of dive. The dive took 10:01:20. The increase occurred at the end of the dive in the interval between leaving 10 feet and reaching the surface. The schedule only prescribes 10 seconds for this interval whereas it took 00:01:02 in the dive.

The initial schedule appears, unmodified, as the final schedule for the dive group, as Table A-10 in Appendix A.

3.11 450-FOOT/30-MINUTE DIVES

3.11.1 Initial Decompression Schedule

The initial schedule for this dive group is presented in Table 33 and a summary of the dives conducted using this schedule is presented in Table 34.

Table 33

INITIAL SCHEDULE 450-FOOT/30-MINUTE

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|--------------------------------|
| 0-75 | 1 | 00:00:00 - 00:01:00 | Air ↓ |
| 75-150 | 1 | 00:01:00 - 00:02:00 | |
| 150-450 | 3 | 00:02:00 - 00:05:00 | HeO ₂ 92/08 ↓ |
| 450 | 25 | 00:05:00 - 00:30:00 | |
| 450-270 | 3 | 00:30:00 - 00:33:00 | ↓ |
| 270 | 1 | 00:33:00 - 00:34:00 | |
| 260 | 1 | 00:34:00 - 00:35:00 | ↓ |
| 250 | 2 | 00:35:00 - 00:37:00 | |
| 240 | 2 | 00:37:00 - 00:39:00 | ↓ |
| 230 | 2 | 00:39:00 - 00:41:00 | |
| 220 | 3 | 00:41:00 - 00:44:00 | ↓ |
| 210 | 2 | 00:44:00 - 00:46:00 | |
| 206 | 2 | 00:46:00 - 00:48:00 | HeO ₂ 80/20 ↓ |
| 202 | 2 | 00:48:00 - 00:50:00 | |
| 198 | 2 | 00:50:00 - 00:52:00 | ↓ |
| 194 | 2 | 00:52:00 - 00:54:00 | |
| 190 | 2 | 00:54:00 - 00:56:00 | ↓ |
| 186 | 2 | 00:56:00 - 00:58:00 | |
| 182 | 2 | 00:58:00 - 01:00:00 | ↓ |
| 178 | 2 | 01:00:00 - 01:02:00 | |
| 174 | 2 | 01:02:00 - 01:04:00 | ↓ |
| 170 | 2 | 01:04:00 - 01:06:00 | |
| 166 | 2 | 01:06:00 - 01:08:00 | ↓ |
| 162 | 2 | 01:08:00 - 01:10:00 | |
| 158 | 2 | 01:10:00 - 01:12:00 | ↓ |
| 154 | 2 | 01:12:00 - 01:14:00 | |
| 150 | 3 | 01:14:00 - 01:17:00 | ↓ |
| 146 | 3 | 01:17:00 - 01:20:00 | |
| 142 | 3 | 01:20:00 - 01:23:00 | ↓ |
| 138 | 3 | 01:23:00 - 01:26:00 | |
| 134 | 3 | 01:26:00 - 01:29:00 | ↓ |

Table 33

INITIAL SCHEDULE 450-FOOT/30-MINUTE (Continued)

| Depth(ft) | Time(min) | Elapsed Time (hr:min:sec) | Media |
|-----------|-----------|---------------------------|----------|
| 130 | 2 | 01:29:00 - 01:31:00 | Air ↓ |
| 128 | 2 | 01:31:00 - 01:33:00 | |
| 126 | 2 | 01:33:00 - 01:35:00 | |
| 124 | 2 | 01:35:00 - 01:37:00 | |
| 122 | 2 | 01:37:00 - 01:39:00 | |
| 120 | 2 | 01:39:00 - 01:41:00 | |
| 118 | 2 | 01:41:00 - 01:43:00 | |
| 116 | 2 | 01:43:00 - 01:45:00 | |
| 114 | 2 | 01:45:00 - 01:47:00 | |
| 112 | 2 | 01:47:00 - 01:49:00 | |
| 110 | 2 | 01:49:00 - 01:51:00 | |
| 108 | 2 | 01:51:00 - 01:53:00 | |
| 106 | 2 | 01:53:00 - 01:55:00 | |
| 104 | 2 | 01:55:00 - 01:57:00 | |
| 102 | 2 | 01:57:00 - 01:59:00 | |
| 100 | 2 | 01:59:00 - 02:01:00 | |
| 98 | 2 | 02:01:00 - 02:03:00 | |
| 96 | 2 | 02:03:00 - 02:05:00 | |
| 94 | 2 | 02:05:00 - 02:07:00 | |
| 92 | 2 | 02:07:00 - 02:09:00 | |
| 90 | 6 | 02:09:00 - 02:15:00 | |
| 88 | 6 | 02:15:00 - 02:21:00 | |
| 86 | 6 | 02:21:00 - 02:27:00 | |
| 84 | 6 | 02:27:00 - 02:33:00 | |
| 82 | 6 | 02:33:00 - 02:39:00 | |
| 80 | 6 | 02:39:00 - 02:45:00 | |
| 78 | 6 | 02:45:00 - 02:51:00 | |
| 76 | 6 | 02:51:00 - 02:57:00 | |
| 74 | 6 | 02:57:00 - 03:03:00 | |
| 72 | 6 | 03:03:00 - 03:09:00 | |
| 70 | 6 | 03:09:00 - 03:15:00 | |
| 68 | 6 | 03:15:00 - 03:21:00 | |
| 66 | 6 | 03:21:00 - 03:27:00 | |
| 64 | 6 | 03:27:00 - 03:33:00 | |
| 62 | 6 | 03:33:00 - 03:39:00 | |
| 60 | 6 | 03:39:00 - 03:45:00 | |
| 58 | 6 | 03:45:00 - 03:51:00 | |
| 56 | 6 | 03:51:00 - 03:57:00 | |
| 54 | 6 | 03:57:00 - 04:03:00 | |
| 52 | 6 | 04:03:00 - 04:09:00 | |

Table 33
INITIAL SCHEDULE 450-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|-------|
| 50 | 18 | 04:09:00 - 04:27:00 | Air |
| 48 | 18 | 04:27:00 - 04:45:00 | |
| 46 | 18 | 04:45:00 - 05:03:00 | |
| 44 | 18 | 05:03:00 - 05:21:00 | |
| 42 | 18 | 05:21:00 - 05:39:00 | |
| 40 | 18 | 05:39:00 - 05:57:00 | |
| 38 | 18 | 05:57:00 - 06:15:00 | |
| 36 | 18 | 06:15:00 - 06:33:00 | |
| 34 | 18 | 06:33:00 - 06:51:00 | |
| 32 | 18 | 06:51:00 - 07:09:00 | ↓ |
| 30 | 20 | 07:09:00 - 07:29:00 | 02 |
| 28 | 30 | 07:29:00 - 07:59:00 | Air |
| 26 | 20 | 07:59:00 - 08:19:00 | 02 |
| 24 | 30 | 08:19:00 - 08:49:00 | Air |
| 22 | 20 | 08:49:00 - 09:09:00 | 02 |
| 20 | 30 | 09:09:00 - 09:39:00 | Air |
| 18 | 20 | 09:39:00 - 09:59:00 | 02 |
| 16 | 30 | 09:59:00 - 10:29:00 | Air |
| 14 | 30 | 10:29:00 - 10:59:00 | 02 |
| 12 | 30 | 10:59:00 - 11:29:00 | Air |
| 10 | 30 | 11:29:00 - 11:59:00 | 02 |
| 10 | 40 | 11:59:00 - 12:39:00 | Air |
| 10 | 30 | 12:39:00 - 13:09:00 | 02 |
| 10 | 40 | 13:09:00 - 13:49:00 | Air |
| 10 | 20 | 13:49:00 - 14:09:00 | 02 |
| 10-0 | 10 | 14:09:00 - 14:19:00 | 02 |

Times at the decompression stops include the time required for travel to next stop.

Table 34

INITIAL SCHEDULE SUMMARY 450-FOOT/30-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|----------|---------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 1 | 2 Jun 66 | Brown Brauner | HeO ₂ 92%/08% 80%/20% | Not Recorded | 00:05:05 | 14:19:03 | No |

3.11.2 Problems/Modifications

There were five dives made in this series. This first, Dive 1, was made on the initial schedule. This schedule was then shortened 10 minutes and the next four dives were executed on the shortened schedule, as summarized in Table 35 (Modification A Schedule Summary).

There is only one difference between the two schedules. There is a 30-minute decompression stop at 14 feet in the initial schedule. This stop is decreased to 20 minutes in Modification A Schedule, accounting for the 10-minute decrease in scheduled total time of dive.

Dive 1 was conducted in accordance with the initial schedule without incident.

Dive 2 varied considerably from the Modification A Schedule. Mullen reported that he was "breathing hard" and then "out of breath" after executing a swimming routine on the bottom. Divers therefore, began ascent six minutes 15 seconds early. There were variations of + 1 minute in several of the alternating O₂ and air periods at 10 feet and the final ascent from 10 feet was a minute faster than scheduled. The shortened bottom time and the subsequent variations produced a total time of dive of 14:03:10, five minutes and 50 seconds shorter than scheduled.

Dive 3 was made without incident. Descent took longer than scheduled as a result of holds at 75, 130, 195 and 415 feet. The rest of the dive conformed to schedule.

Both Casse and Lazzaro had ear trouble during descent on Dive 4. Descent time was extended for this reason. Examination of Casse following the dive indicated evidence of acute ear squeeze. The remainder of the dive conformed to schedule except for the final ascent from 10 feet. This took 1 minute 36 seconds longer than scheduled, resulting in a total time of dive of 14:10:36 as compared to the scheduled time of 14:09:00.

Dive 5 progressed as scheduled to the 14-foot depth where Donaldson experienced pain in his right knee. He was successfully recompressed. Wyatt and Wells proceeded to execute the dive as scheduled without incident. The stop at 14 feet was extended slightly because of Donaldson's difficulty. This accounted for the 3-minute increase in the total time of dive for Wyatt and Wells (14:12:00 vice the scheduled 14:09:00).

Modification A Schedule is presented as the final schedule in this dive group as Table A-11 in Appendix A.

Table 35

MODIFICATION A SCHEDULE SUMMARY 450-FOOT/30-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|-----------------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 2 | 16 Jun 66 | Mullen Parkinson | HeO ₂ 92%/08% 80%/20% | Not Recorded | 00:05:12 | 14:03:10* | No |
| 3 | 21 Jul 66 | Rudin Sundstrom | HeO ₂ 92%/08% 80%/20% | Not Recorded | 00:09:09 | 14:09:30 | No |
| 4 | 4 Oct 66 | Reedy Casse Lazzaro | HeO ₂ 92%/08% 80%/20% | Not Recorded | 00:08:55 | 14:10:36 | No |
| 5 | 11 Oct 66 | Donaldson Wells Wyatt | HeO ₂ 92%/08% 80%/20% | Not Recorded | 00:05:20 | 14:12:00 | Donaldson |

* Dive 2 had a short bottom time. Subjects began ascent 6 minutes 15 seconds early

3.12 450-FOOT/60-MINUTE DIVES

3.12.1 Initial Decompression Schedule

The initial decompression schedule for this group is presented in Table 36 and the summary of dives conducted using this schedule is presented in Table 37.

Table 36

INITIAL SCHEDULE 450-FOOT/60-MINUTE

| Depth(ft) | Time(min) | Elapsed Time(hr:min:sec) | Media |
|-----------|-----------|--------------------------|---------------------------------------|
| 0-75 | 1 | 00:00:00 - 00:01:00 | Air HeO ₂ 92/08 ↓ |
| 75-150 | 1 | 00:01:00 - 00:02:00 | |
| 150-250 | 1 | 00:02:00 - 00:03:00 | |
| 250-350 | 1 | 00:03:00 - 00:04:00 | |
| 350-450 | 1 | 00:04:00 - 00:05:00 | |
| 450 | 55 | 00:05:00 - 01:00:00 | |
| 450-400 | 1 | 01:00:00 - 01:01:00 | |
| 400-350 | 1 | 01:01:00 - 01:02:00 | |
| 350-300 | 1 | 01:02:00 - 01:03:00 | |
| 300 | 1 | 01:03:00 - 01:04:00 | |
| 290 | 2 | 01:04:00 - 01:06:00 | |
| 280 | 2 | 01:06:00 - 01:08:00 | |
| 275 | 2 | 01:08:00 - 01:10:00 | |
| 270 | 2 | 01:10:00 - 01:12:00 | |
| 265 | 2 | 01:12:00 - 01:14:00 | |
| 260 | 2 | 01:14:00 - 01:16:00 | |
| 255 | 2 | 01:16:00 - 01:18:00 | |
| 250 | 2 | 01:18:00 - 01:20:00 | |
| 245 | 2 | 01:20:00 - 01:22:00 | |
| 240 | 2 | 01:22:00 - 01:24:00 | |
| 236 | 2 | 01:24:00 - 01:26:00 | |
| 232 | 2 | 01:26:00 - 01:28:00 | |
| 228 | 2 | 01:28:00 - 01:30:00 | |
| 224 | 2 | 01:30:00 - 01:32:00 | |
| 220 | 2 | 01:32:00 - 01:34:00 | |
| 218 | 2 | 01:34:00 - 01:36:00 | |
| 216 | 2 | 01:36:00 - 01:38:00 | |
| 214 | 2 | 01:38:00 - 01:40:00 | |
| 212 | 2 | 01:40:00 - 01:42:00 | |

Table 36

INITIAL SCHEDULE 450-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|--------------------------------|
| 210 | 2 | 01:42:00 - 01:44:00 | HeO ₂ 92/08 |
| 208 | 2 | 01:44:00 - 01:46:00 | |
| 206 | 2 | 01:46:00 - 01:48:00 | ↓ HeO ₂ 80/20 |
| 204 | 2 | 01:48:00 - 01:50:00 | |
| 202 | 2 | 01:50:00 - 01:52:00 | ↓ |
| 200 | 2 | 01:52:00 - 01:54:00 | |
| 198 | 2 | 01:54:00 - 01:56:00 | ↓ |
| 196 | 2 | 01:56:00 - 01:58:00 | |
| 194 | 2 | 01:58:00 - 02:00:00 | ↓ |
| 192 | 2 | 02:00:00 - 02:02:00 | |
| 190 | 2 | 02:02:00 - 02:04:00 | ↓ |
| 188 | 2 | 02:04:00 - 02:06:00 | |
| 186 | 2 | 02:06:00 - 02:08:00 | ↓ |
| 184 | 2 | 02:08:00 - 02:10:00 | |
| 182 | 2 | 02:10:00 - 02:12:00 | ↓ |
| 180 | 2 | 02:12:00 - 02:14:00 | |
| 178 | 2 | 02:14:00 - 02:16:00 | ↓ |
| 176 | 2 | 02:16:00 - 02:18:00 | |
| 174 | 2 | 02:18:00 - 02:20:00 | ↓ |
| 172 | 2 | 02:20:00 - 02:22:00 | |
| 170 | 2 | 02:22:00 - 02:24:00 | ↓ |
| 168 | 2 | 02:24:00 - 02:26:00 | |
| 166 | 2 | 02:26:00 - 02:28:00 | ↓ |
| 164 | 2 | 02:28:00 - 02:30:00 | |
| 162 | 2 | 02:30:00 - 02:32:00 | ↓ |
| 160 | 2 | 02:32:00 - 02:34:00 | |
| 158 | 2 | 02:34:00 - 02:36:00 | ↓ |
| 156 | 2 | 02:36:00 - 02:38:00 | |
| 154 | 2 | 02:38:00 - 02:40:00 | ↓ |
| 152 | 2 | 02:40:00 - 02:42:00 | |
| 150 | 2 | 02:42:00 - 02:44:00 | ↓ |
| 148 | 2 | 02:44:00 - 02:46:00 | |
| 146 | 2 | 02:46:00 - 02:48:00 | ↓ |
| 144 | 2 | 02:48:00 - 02:50:00 | |
| 142 | 2 | 02:50:00 - 02:52:00 | ↓ |
| 140 | 3 | 02:52:00 - 02:55:00 | |
| 138 | 3 | 02:55:00 - 02:58:00 | ↓ |
| 136 | 3 | 02:58:00 - 03:01:00 | |
| 134 | 3 | 03:01:00 - 03:04:00 | ↓ |
| 132 | 3 | 03:04:00 - 03:07:00 | |

Table 36

INITIAL SCHEDULE 450-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------|
| 130 | 3 | 03:07:00 - 03:10:00 | Air ↓ |
| 128 | 3 | 03:10:00 - 03:13:00 | |
| 126 | 3 | 03:13:00 - 03:16:00 | |
| 124 | 3 | 03:16:00 - 03:19:00 | |
| 122 | 3 | 03:19:00 - 03:22:00 | |
| 120 | 4 | 03:22:00 - 03:26:00 | |
| 118 | 4 | 03:26:00 - 03:30:00 | |
| 116 | 4 | 03:30:00 - 03:34:00 | |
| 114 | 4 | 03:34:00 - 03:38:00 | |
| 112 | 4 | 03:38:00 - 03:42:00 | |
| 110 | 4 | 03:42:00 - 03:46:00 | |
| 108 | 4 | 03:46:00 - 03:50:00 | |
| 106 | 4 | 03:50:00 - 03:54:00 | |
| 104 | 4 | 03:54:00 - 03:58:00 | |
| 102 | 4 | 03:58:00 - 04:02:00 | |
| 100 | 12 | 04:02:00 - 04:14:00 | |
| 98 | 12 | 04:14:00 - 04:26:00 | |
| 96 | 12 | 04:26:00 - 04:38:00 | |
| 94 | 12 | 04:38:00 - 04:50:00 | |
| 92 | 12 | 04:50:00 - 05:02:00 | |
| 90 | 12 | 05:02:00 - 05:14:00 | |
| 88 | 12 | 05:14:00 - 05:26:00 | |
| 86 | 12 | 05:26:00 - 05:38:00 | |
| 84 | 12 | 05:38:00 - 05:50:00 | |
| 82 | 12 | 05:50:00 - 06:02:00 | |
| 80 | 16 | 06:02:00 - 06:18:00 | |
| 78 | 16 | 06:18:00 - 06:34:00 | |
| 76 | 16 | 06:34:00 - 06:50:00 | |
| 74 | 16 | 06:50:00 - 07:06:00 | |
| 72 | 16 | 07:06:00 - 07:22:00 | |
| 70 | 16 | 07:22:00 - 07:38:00 | |
| 68 | 16 | 07:38:00 - 07:54:00 | |
| 66 | 16 | 07:54:00 - 08:10:00 | |
| 64 | 16 | 08:10:00 - 08:26:00 | |
| 62 | 16 | 08:26:00 - 08:42:00 | |
| 60 | 20 | 08:42:00 - 09:02:00 | |
| 58 | 20 | 09:02:00 - 09:22:00 | |
| 56 | 20 | 09:22:00 - 09:42:00 | |
| 54 | 20 | 09:42:00 - 10:02:00 | |

Table 36

INITIAL SCHEDULE 450-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|-------|
| 52 | 20 | 10:02:00 - 10:22:00 | Air |
| 50 | 20 | 10:22:00 - 10:42:00 | |
| 48 | 20 | 10:42:00 - 11:02:00 | |
| 46 | 20 | 11:02:00 - 11:22:00 | |
| 44 | 20 | 11:22:00 - 11:42:00 | |
| 42 | 20 | 11:42:00 - 12:02:00 | |
| 40 | 22 | 12:02:00 - 12:24:00 | |
| 38 | 22 | 12:24:00 - 12:46:00 | |
| 36 | 22 | 12:46:00 - 13:08:00 | |
| 34 | 22 | 13:08:00 - 13:30:00 | |
| 32 | 22 | 13:30:00 - 13:52:00 | |
| 30 | 30 | 13:52:00 - 14:22:00 | |
| 28 | 20 | 14:22:00 - 14:42:00 | 02 |
| 26 | 30 | 14:42:00 - 15:12:00 | Air |
| 24 | 20 | 15:12:00 - 15:32:00 | 02 |
| 22 | 30 | 15:32:00 - 16:02:00 | Air |
| 20 | 30 | 16:02:00 - 16:32:00 | 02 |
| 18 | 30 | 16:32:00 - 17:02:00 | Air |
| 16 | 30 | 17:02:00 - 17:32:00 | 02 |
| 14 | 30 | 17:32:00 - 18:02:00 | Air |
| 12 | 30 | 18:02:00 - 18:32:00 | 02 |
| 10 | 30 | 18:32:00 - 19:02:00 | Air |
| 10 | 30 | 19:02:00 - 19:32:00 | 02 |
| 10 | 30 | 19:32:00 - 20:02:00 | Air |
| 10 | 30 | 20:02:00 - 20:32:00 | 02 |
| 10 | 30 | 20:32:00 - 21:02:00 | Air |
| 10 | 20 | 21:02:00 - 21:22:00 | 02 |
| 10-0 | 10 | 21:22:00 - 21:32:00 | 02 |

Times at the decompression stops include the time required for travel to next stop.

Table 37

INITIAL SCHEDULE SUMMARY 450-FOOT/60-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|-----------|-----------------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 1 | 23 Jun 66 | Wyatt Blackburn | HeO ₂ 92%/08% 80%/20% | Not Recorded | 00:05:40 | 21:32:20 | No |
| 2 | 30 Jun 66 | Kennedy Coffman | HeO ₂ 92%/08% 80%/20% | Not Recorded | 00:06:00 | 21:33:34 | No |
| 3 | 13 Oct 66 | Casse Parkinson Reedy | HeO ₂ 92%/08% 80%/20% | Not Recorded | 00:05:30 | 21:34:10 | Casse (possible) |
| 4 | 20 Oct 66 | Wells Stubbs Mesplay | HeO ₂ 92%/08% 80%/20% | Not Recorded | 00:05:08 | 21:32:00 | |

3.12.2 Problems/Modifications

All four dives were executed as scheduled with no significant deviations. There were some minor deviations in rates of travel. Dives 1, 2 and 3 descended to bottom at 75 FPM, arriving between 30 and 60 seconds later than scheduled. On ascent, the rates of travel on Dives 1, 2 and 3 varied slightly in the interval between 300 feet and 208 feet. The minor increases in the total times of dive for Dives 1, 2 and 3 as compared to the scheduled time of 21:32:00 resulted from slow ascents in the final interval between 10 feet and the surface.

Casse experienced dizziness and nausea during Dive 3 beginning at the 98-foot depth at elapsed time 04:22:30. He was attended by a medical officer in the chamber. He completed the dive as scheduled. Symptoms persisted throughout the remainder of the dive although he felt slightly better. He was still experiencing dizziness during post-dive medical examination; nausea. Results of exam were normal. No after effects were recorded.

The initial schedule, unmodified, is presented as the final schedule in this dive group as Table A-12 in Appendix A.

3.13 500-FOOT/30-MINUTE DIVES

3.13.1 Initial Decompression Schedule

The initial decompression schedule for this dive group is presented in Table 38 and the summary of the dives conducted using this schedule is presented in Table 39.

Table 38
INITIAL SCHEDULE 500-FOOT/30-MINUTE


| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|--|
| 0-100 | 1.33 | 00:00:00 - 00:01:20 | Air |
| 100-500 | 5.33 | 00:01:20 - 00:06:40 | HeO ₂ |
| 500 | 23.33 | 00:06:40 - 00:30:00 | 92/8 |
| 500-290 | 4 | 00:30:00 - 00:34:00 |  |
| 290 | 2 | 00:34:00 - 00:36:00 | |
| 280 | 2 | 00:36:00 - 00:38:00 | |
| 270 | 2 | 00:38:00 - 00:40:00 | |
| 260 | 2 | 00:40:00 - 00:42:00 | |
| 250 | 2 | 00:42:00 - 00:44:00 | |
| 245 | 2 | 00:44:00 - 00:46:00 | |
| 240 | 2 | 00:46:00 - 00:48:00 | |
| 235 | 2 | 00:48:00 - 00:50:00 | |
| 230 | 2 | 00:50:00 - 00:52:00 | |
| 225 | 2 | 00:52:00 - 00:54:00 | |
| 220 | 2 | 00:54:00 - 00:56:00 | |
| 215 | 2 | 00:56:00 - 00:58:00 | |
| 210 | 2 | 00:58:00 - 01:00:00 | |
| 205 | 2 | 01:00:00 - 01:02:00 | |
| 200 | 2 | 01:02:00 - 01:04:00 | |
| 195 | 2 | 01:04:00 - 01:06:00 | |
| 190 | 2 | 01:06:00 - 01:08:00 | |
| 186 | 2 | 01:08:00 - 01:10:00 | |
| 182 | 2 | 01:10:00 - 01:12:00 | |
| 178 | 2 | 01:12:00 - 01:14:00 | |
| 174 | 2 | 01:14:00 - 01:16:00 | |
| 170 | 2 | 01:16:00 - 01:18:00 | |
| 168 | 2 | 01:18:00 - 01:20:00 | |
| 166 | 2 | 01:20:00 - 01:22:00 | |
| 164 | 2 | 01:22:00 - 01:24:00 | |
| 162 | 2 | 01:24:00 - 01:26:00 | |
| 160 | 2 | 01:26:00 - 01:28:00 | |

Table 38

INITIAL SCHEDULE 500-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|--------------------------------|
| 158 | 2 | 01:28:00 - 01:30:00 | HeO ₂ 80/20 ↓ |
| 156 | 2 | 01:30:00 - 01:32:00 | |
| 154 | 2 | 01:32:00 - 01:34:00 | |
| 152 | 2 | 01:34:00 - 01:36:00 | |
| 150 | 2 | 01:36:00 - 01:38:00 | |
| 148 | 2 | 01:38:00 - 01:40:00 | |
| 146 | 2 | 01:40:00 - 01:42:00 | |
| 144 | 2 | 01:42:00 - 01:44:00 | |
| 142 | 2 | 01:44:00 - 01:46:00 | |
| 140 | 2 | 01:46:00 - 01:48:00 | |
| 138 | 2 | 01:48:00 - 01:50:00 | |
| 136 | 2 | 01:50:00 - 01:52:00 | |
| 134 | 2 | 01:52:00 - 01:54:00 | |
| 132 | 2 | 01:54:00 - 01:56:00 | |
| 130 | 2 | 01:56:00 - 01:58:00 | |
| 128 | 2 | 01:58:00 - 02:00:00 | Air ↓ |
| 126 | 2 | 02:00:00 - 02:02:00 | |
| 124 | 2 | 02:02:00 - 02:04:00 | |
| 122 | 2 | 02:04:00 - 02:06:00 | |
| 120 | 2 | 02:06:00 - 02:08:00 | |
| 118 | 2 | 02:08:00 - 02:10:00 | |
| 116 | 2 | 02:10:00 - 02:12:00 | |
| 114 | 2 | 02:12:00 - 02:14:00 | |
| 112 | 2 | 02:14:00 - 02:16:00 | |
| 110 | 4 | 02:16:00 - 02:20:00 | |
| 108 | 4 | 02:20:00 - 02:24:00 | |
| 106 | 4 | 02:24:00 - 02:28:00 | |
| 104 | 4 | 02:28:00 - 02:32:00 | |
| 102 | 4 | 02:32:00 - 02:36:00 | |
| 100 | 4 | 02:36:00 - 02:40:00 | |
| 98 | 4 | 02:40:00 - 02:44:00 | |
| 96 | 4 | 02:44:00 - 02:48:00 | |
| 94 | 4 | 02:48:00 - 02:52:00 | |
| 92 | 4 | 02:52:00 - 02:56:00 | |
| 90 | 5 | 02:56:00 - 03:01:00 | |
| 88 | 5 | 03:01:00 - 03:06:00 | |
| 86 | 5 | 03:06:00 - 03:11:00 | |
| 84 | 5 | 03:11:00 - 03:16:00 | |
| 82 | 5 | 03:16:00 - 03:21:00 | |
| 80 | 5 | 03:21:00 - 03:26:00 | |

Table 38

INITIAL SCHEDULE 500-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------|
| 78 | 5 | 03:26:00 - 03:31:00 | Air ↓ |
| 76 | 5 | 03:31:00 - 03:36:00 | |
| 74 | 5 | 03:36:00 - 03:41:00 | |
| 72 | 5 | 03:41:00 - 03:46:00 | |
| 70 | 13 | 03:46:00 - 03:59:00 | |
| 68 | 13 | 03:59:00 - 04:12:00 | |
| 66 | 13 | 04:12:00 - 04:25:00 | |
| 64 | 13 | 04:25:00 - 04:38:00 | |
| 62 | 13 | 04:38:00 - 04:51:00 | |
| 60 | 13 | 04:51:00 - 05:04:00 | |
| 58 | 13 | 05:04:00 - 05:17:00 | |
| 56 | 13 | 05:17:00 - 05:30:00 | |
| 54 | 13 | 05:30:00 - 05:43:00 | |
| 52 | 13 | 05:43:00 - 05:56:00 | |
| 50 | 18 | 05:56:00 - 06:14:00 | |
| 48 | 18 | 06:14:00 - 06:32:00 | |
| 46 | 18 | 06:32:00 - 06:50:00 | |
| 44 | 18 | 06:50:00 - 07:08:00 | |
| 42 | 18 | 07:08:00 - 07:26:00 | |
| 40 | 18 | 07:26:00 - 07:44:00 | |
| 38 | 18 | 07:44:00 - 08:02:00 | |
| 36 | 18 | 08:02:00 - 08:20:00 | |
| 34 | 18 | 08:20:00 - 08:38:00 | |
| 32 | 18 | 08:38:00 - 08:56:00 | |
| 30 | 30 | 08:56:00 - 09:26:00 | |
| 28 | 20 | 09:26:00 - 09:46:00 | 02 |
| 26 | 30 | 09:46:00 - 10:16:00 | Air |
| 24 | 20 | 10:16:00 - 10:36:00 | 02 |
| 22 | 30 | 10:36:00 - 11:06:00 | Air |
| 20 | 30 | 11:06:00 - 11:36:00 | 02 |
| 18 | 30 | 11:36:00 - 12:06:00 | Air |
| 16 | 30 | 12:06:00 - 12:36:00 | 02 |
| 14 | 30 | 12:36:00 - 13:06:00 | Air |
| 12 | 30 | 13:06:00 - 13:36:00 | 02 |
| 10 | 30 | 13:36:00 - 14:06:00 | Air |
| 10 | 30 | 14:06:00 - 14:36:00 | 02 |
| 10 | 30 | 14:36:00 - 15:06:00 | Air |
| 10 | 30 | 15:06:00 - 15:36:00 | 02 |
| 10 | 30 | 15:36:00 - 16:06:00 | Air |
| 10 | 20 | 16:06:00 - 16:26:00 | 02 |
| 10-0 | 10 | 16:26:00 - 16:36:00 | 02 |

Times at the decompression stops include the time required for travel to next stop.

Table 39

INITIAL SCHEDULE SUMMARY 500-FOOT/30-MINUTE

| Dive No. | Date | Subject | Principal Breathing Mixture | Surface Injection Rate | Time to Bottom | Total Time of Dive | Decompression Sickness |
|----------|----------|----------------|--|------------------------|----------------|--------------------|------------------------|
| | | | | liters/min | hr:min:sec | hr:min:sec | |
| 1 | 4 Aug 66 | Wallace Hendry | HeO ₂ 92%/08% 80%/20% | 38.5 25.0 | 00:06:10 | 16:36:00 | No |

3.13.2 Problems/Modifications

Only one dive was made in this group. The dive adhered to schedule except for two minor deviations. Descent was 30 seconds faster than scheduled. The shift to 80%-20% HeO₂ at 205 feet was made one minute late. No problems were encountered during the dive.

The initial schedule, unmodified, is presented as the final schedule for this dive group as Table A-13 in Appendix A.

Section 4

DISCUSSION OF RESULTS

In this section, pertinent aspects of the dives are discussed. Table 40 presents an overall summary of the dives conducted.

Table 40

SUMMARY OF DIVE GROUPS

| Dive Group Depth/Time | Dives Conducted | Man-Dives | Schedules | Cases of Decom- pression Sickness |
|--------------------------|--------------------|-----------|-----------|--|
| 300-foot/15-minute | 8 | 16 | 1 | 0 |
| 300-foot/30-minute | 10 | 20 | 3 | 2 |
| 300-foot/60-minute | 3 | 6 | 2 | 0 |
| 350-foot/15-minute | 2 | 4 | 1 | 0 |
| 350-foot/30-minute | 2 | 4 | 1 | 0 |
| 350-foot/60-minute | 3 | 6 | 3 | 2 |
| 400-foot/15-minute | 4 | 8 | 2 | 3 |
| 400-foot/30-minute | 4 | 8 | 1 | 0 |
| 400-foot/60-minute | 7 | 16 | 3 | 3 |
| 450-foot/15-minute | 1 | 2 | 1 | 0 |
| 450-foot/30-minute | 5 | 12 | 2 | 2 |
| 450-foot/60-minute | 4 | 10 | 1 | 1 (poss) |
| 500-foot/30-minute | 1 | 2 | 1 | 0 |
| Totals | | | | |
| 13 Dive Groups | 54 | 114 | 22 | 13 |

4.1 DECOMPRESSION EXPERIENCE

There were 13 occurrences of decompression sickness reported. The breakdown for each dive group is as follows.

| | |
|--------------------|--------------|
| 300-foot/30-minute | 2 |
| 350-foot/60-minute | 2 |
| 400-foot/15-minute | 3 |
| 400-foot/60-minute | 3 |
| 450-foot/30-minute | 2 |
| 450-foot/60-minute | 1 (possible) |

Of the 44 divers involved in these dives, 10 divers suffered decompression sickness. Three divers experienced decompression sickness twice. Each of the other seven divers encountered it once. The 13 cases of decompression sickness were distributed among divers as follows:

| | | | |
|-----------|-------------|--------|---|
| Brauner | 1 | Lazaro | 1 |
| Casse | 1(possible) | Meeks | 1 |
| Donaldson | 2 | Mullen | 2 |
| Garrahan | 2 | Pratt | 1 |
| Jones | 1 | Rudin | 1 |

Appendix C presents the summaries by dive group and by diver of the decompression sickness encountered.

4.2 ACTUAL VS TEST CONDITIONS

The differences between the test conditions and conditions at sea should be fully realized. For the experimental dives, the test chamber was pressurized on air, causing the divers to stop at around 100 feet during descent to put on the diving rig. At sea, the diving bell would be pressurized on the HeO₂ mixture, allowing the divers to descend straight to the bottom.

Decompression for the experimental dives was also accomplished with the chamber pressurized on air. At the stipulated depth, the divers stopped breathing the HeO₂ mixture from the diving rig and breathed the chamber air, getting oxygen, when required, from a mask. At sea, the air decompression would be accomplished in a deck decompression chamber. The time at which the divers are scheduled to breathe air, however, does not change from the experimental situation. Therefore, the diving bell, which was pressurized on HeO₂, must be brought up to permit the divers to transfer to the deck decompression chamber at precisely the right time. The remainder of the dive is basically the same for both actual and experimental situations.

4.3 STATUS OF FINAL DECOMPRESSION SCHEDULES

The final decompression schedules found in Appendix A are the most successful of those tested for each dive group. In those instances where only one schedule was tested in a dive group, that schedule is included in Appendix A as the final schedule in the group.

The final schedules are published for information of all interested activities and individuals. At the time of publication of this report, these schedules have not been evaluated in the open sea and have not been promulgated by the Navy for routine diving operations.

APPENDIX A

FINAL DECOMPRESSION SCHEDULES

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Table A-1

FINAL SCHEDULE - 300-FOOT/15-MINUTE

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|--|
| 0-100 | 1 | 00:00:00 - 00:01:00 | Air |
| 100 | 0.5 | 00:01:00 - 00:01:30 | HeO ₂ 80/20 |
| 100-300 | 2 | 00:01:30 - 00:03:30 | <div style="text-align: center;"> ↓ Air ↓ </div> |
| 300 | 11.5 | 00:03:30 - 00:15:00 | |
| 300-120 | 3 | 00:15:00 - 00:18:00 | |
| 120 | 1 | 00:18:00 - 00:19:00 | |
| 110 | 2 | 00:19:00 - 00:21:00 | |
| 100 | 2 | 00:21:00 - 00:23:00 | |
| 90 | 2 | 00:23:00 - 00:25:00 | |
| 80 | 5 | 00:25:00 - 00:30:00 | |
| 70 | 5 | 00:30:00 - 00:35:00 | |
| 60 | 5 | 00:35:00 - 00:40:00 | |
| 50 | 5 | 00:40:00 - 00:45:00 | |
| 46 | 15 | 00:45:00 - 01:00:00 | O ₂ |
| 30 | 15 | 01:00:00 - 01:15:00 | Air |
| 20 | 25 | 01:15:00 - 01:40:00 | O ₂ |
| 10 | 25 | 01:40:00 - 02:05:00 | Air |
| 10-0 | 10 | 02:05:00 - 02:15:00 | O ₂ |

Times at the decompression stops include the time required for travel to next stop.

Bends-free Man-Dives: 16
Decompression Sickness: 0

Table A-2

FINAL SCHEDULE - 300 FOOT/30-MINUTE

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|------------------|
| 0-75 | 1 | 00:00:00 - 00:01:00 | Air |
| 75 | 0.5 | 00:01:00 - 00:01:30 | ↓ |
| 75-300 | 3 | 00:01:30 - 00:04:30 | HeO ₂ |
| 300 | 25.5 | 00:04:30 - 00:30:00 | 85/15 |
| | | | ↓ |
| 300-180 | 2 | 00:30:00 - 00:32:00 | |
| 180-150 | 1 | 00:32:00 - 00:33:00 | |
| 150 | 1 | 00:33:00 - 00:34:00 | HeO ₂ |
| 140 | 2 | 00:34:00 - 00:36:00 | 80/20 |
| | | | ↓ |
| 130 | 5 | 00:36:00 - 00:41:00 | |
| 120 | 5 | 00:41:00 - 00:46:00 | |
| 110 | 5 | 00:46:00 - 00:51:00 | |
| 100 | 5 | 00:51:00 - 00:56:00 | Air |
| 90 | 5 | 00:56:00 - 01:01:00 | ↓ |
| | | | |
| 80 | 15 | 01:01:00 - 01:16:00 | |
| 70 | 15 | 01:16:00 - 01:31:00 | |
| 60 | 15 | 01:31:00 - 01:46:00 | |
| 50 | 20 | 01:46:00 - 02:06:00 | ↓ |
| | | | |
| 40 | 30 | 02:06:00 - 02:36:00 | O ₂ |
| 30 | 30 | 02:36:00 - 03:06:00 | Air |
| 30 | 30 | 03:06:00 - 03:36:00 | O ₂ |
| 20 | 30 | 03:36:00 - 04:06:00 | Air |
| 20 | 30 | 04:06:00 - 04:36:00 | O ₂ |
| | | | ↓ |
| 10 | 30 | 04:36:00 - 05:06:00 | Air |
| 10 | 30 | 05:06:00 - 05:36:00 | O ₂ |
| 10 | 30 | 05:36:00 - 06:06:00 | Air |
| 10 | 20 | 06:06:00 - 06:26:00 | O ₂ |
| 10-0 | 10 | 06:26:00 - 06:36:00 | O ₂ |

Times at the decompression stops include the time required for travel to next stop.

Bends-free Man-Dives: 10
Decompression Sickness: 0

Table A-3

FINAL SCHEDULE - 300-FOOT/60-MINUTE

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|------------------|
| 0-120 | 2 | 00:00:00 - 00:02:00 | Air |
| 120 | 0.5 | 00:02:00 - 00:02:30 | ↓ |
| 120-300 | 3 | 00:02:30 - 00:05:30 | HeO ₂ |
| 300 | 54.5 | 00:05:30 - 01:00:00 | 85/15 |
| | | | ↓ |
| 300-180 | 2 | 01:00:00 - 01:02:00 | HeO ₂ |
| 180-160 | 1 | 01:02:00 - 01:03:00 | ↓ |
| | | | 80/20 |
| 160 | 2 | 01:03:00 - 01:05:00 | ↓ |
| 156 | 2 | 01:05:00 - 01:07:00 | ↓ |
| 152 | 2 | 01:07:00 - 01:09:00 | ↓ |
| 148 | 2 | 01:09:00 - 01:11:00 | ↓ |
| 144 | 2 | 01:11:00 - 01:13:00 | ↓ |
| 140 | 2 | 01:13:00 - 01:15:00 | ↓ |
| 136 | 2 | 01:15:00 - 01:17:00 | ↓ |
| | | | ↓ |
| 132 | 2 | 01:17:00 - 01:19:00 | ↓ |
| 128 | 2 | 01:19:00 - 01:21:00 | ↓ |
| 124 | 2 | 01:21:00 - 01:23:00 | ↓ |
| 120 | 2 | 01:23:00 - 01:25:00 | ↓ |
| 116 | 2 | 01:25:00 - 01:27:00 | ↓ |
| 112 | 2 | 01:27:00 - 01:29:00 | ↓ |
| 108 | 2 | 01:29:00 - 01:31:00 | ↓ |
| 104 | 2 | 01:31:00 - 01:33:00 | Air |
| | | | ↓ |
| 100 | 4 | 01:33:00 - 01:37:00 | ↓ |
| 96 | 4 | 01:37:00 - 01:41:00 | ↓ |
| 92 | 4 | 01:41:00 - 01:45:00 | ↓ |
| 88 | 4 | 01:45:00 - 01:49:00 | ↓ |
| 84 | 4 | 01:49:00 - 01:53:00 | ↓ |

Table A-3

FINAL SCHEDULE - 300-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|--|
| 80 | 4 | 01:53:00 - 01:57:00 | Air |
| 76 | 4 | 01:57:00 - 02:01:00 | |
| 72 | 4 | 02:01:00 - 02:05:00 | |
| 68 | 4 | 02:05:00 - 02:09:00 | |
| 64 | 4 | 02:09:00 - 02:13:00 | |
| 60 | 8 | 02:13:00 - 02:21:00 | ↓ Air ↓ O ₂ ↓ Air ↓ O ₂ ↓ Air ↓ O ₂ ↓ |
| 58 | 8 | 02:21:00 - 02:29:00 | |
| 56 | 8 | 02:29:00 - 02:37:00 | |
| 54 | 8 | 02:37:00 - 02:45:00 | |
| 52 | 8 | 02:45:00 - 02:53:00 | |
| 50 | 8 | 02:53:00 - 03:01:00 | |
| 48 | 8 | 03:01:00 - 03:09:00 | |
| 46 | 8 | 03:09:00 - 03:17:00 | |
| 44 | 8 | 03:17:00 - 03:25:00 | |
| 42 | 8 | 03:25:00 - 03:33:00 | |
| 40 | 8 | 03:33:00 - 03:41:00 | |
| 38 | 8 | 03:41:00 - 03:49:00 | |
| 36 | 8 | 03:49:00 - 03:57:00 | |
| 34 | 8 | 03:57:00 - 04:05:00 | |
| 32 | 8 | 04:05:00 - 04:13:00 | |
| 30 | 15 | 04:13:00 - 04:28:00 | O ₂ |
| 28 | 15 | 04:28:00 - 04:43:00 | ↓ Air |
| 26 | 15 | 04:43:00 - 04:58:00 | ↓ O ₂ |
| 24 | 15 | 04:58:00 - 05:13:00 | ↓ Air |
| 22 | 15 | 05:13:00 - 05:28:00 | ↓ O ₂ |
| 20 | 15 | 05:28:00 - 05:43:00 | ↓ Air |
| 18 | 15 | 05:43:00 - 05:58:00 | ↓ O ₂ |
| 16 | 15 | 05:58:00 - 06:13:00 | ↓ |
| 14 | 15 | 06:13:00 - 06:28:00 | |
| 12 | 15 | 06:28:00 - 06:43:00 | |

Table A-3

FINAL SCHEDULE - 300-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------------|
| 10 | 30 | 06:43:00 - 07:13:00 | Air |
| 10 | 30 | 07:13:00 - 07:43:00 | O ₂ |
| 10 | 30 | 07:43:00 - 08:13:00 | Air |
| 10 | 20 | 08:13:00 - 08:33:00 | O ₂ |
| 10-0 | 10 | 08:33:00 - 08:43:00 | O ₂ |

Times at the decompression stops include the time required for travel to next stop.

Bends-free Man-Dives: 2
Decompression Sickness: 0

Table A-4

FINAL SCHEDULE - 350-FOOT/15-MINUTE

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|--|
| 0-75 | 1 | 00:00:00 - 00:01:00 | Air HeO ₂ 85/15 ↓ |
| 75 | 0.5 | 00:01:00 - 00:01:30 | |
| 75-350 | 5 | 00:01:30 - 00:06:30 | |
| 350 | 8.5 | 00:06:30 - 00:15:00 | |
| 350-170 | 3 | 00:15:00 - 00:18:00 | ↓ Air ↓ |
| 170-140 | 1 | 00:18:00 - 00:19:00 | |
| 140 | 2 | 00:19:00 - 00:21:00 | |
| 130 | 2 | 00:21:00 - 00:23:00 | |
| 120 | 2 | 00:23:00 - 00:25:00 | |
| 110 | 2 | 00:25:00 - 00:27:00 | |
| 100 | 2 | 00:27:00 - 00:29:00 | |
| 90 | 5 | 00:29:00 - 00:34:00 | ↓ |
| 80 | 5 | 00:34:00 - 00:39:00 | |
| 70 | 10 | 00:39:00 - 00:49:00 | |
| 60 | 10 | 00:49:00 - 00:59:00 | |
| 50 | 10 | 00:59:00 - 01:09:00 | |
| 40 | 15 | 01:09:00 - 01:24:00 | O ₂ Air O ₂ ↓ |
| 30 | 25 | 01:24:00 - 01:49:00 | |
| 20 | 25 | 01:49:00 - 02:14:00 | |
| 10 | 25 | 02:14:00 - 02:39:00 | Air O ₂ O ₂ |
| 10 | 20 | 02:39:00 - 02:59:00 | |
| 10-0 | 10 | 02:59:00 - 03:09:00 | |

Times at the decompression stops include the time required for travel to next stop.

Bends-free Man-Dives: 4
Decompression Sickness: 0

Table A-5

FINAL SCHEDULE - 350-FOOT/30-MINUTE

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|------------------|
| 0-50 | 1 | 00:00:00 - 00:01:00 | Air |
| 50-125 | 1 | 00:01:00 - 00:02:00 | ↓ |
| 125-200 | 1 | 00:02:00 - 00:03:00 | HeO ₂ |
| 200-275 | 1 | 00:03:00 - 00:04:00 | 87/13 |
| 275-350 | 1 | 00:04:00 - 00:05:00 | ↓ |
| 350 | 25 | 00:05:00 - 00:30:00 | |
| 350-290 | 1 | 00:30:00 - 00:31:00 | |
| 290-230 | 1 | 00:31:00 - 00:32:00 | |
| 230-180 | 1 | 00:32:00 - 00:33:00 | ↓ |
| 180 | 1 | 00:33:00 - 00:34:00 | HeO ₂ |
| 175 | 1 | 00:34:00 - 00:35:00 | 80/20 |
| 170 | 1 | 00:35:00 - 00:36:00 | ↓ |
| 165 | 1 | 00:36:00 - 00:37:00 | |
| 160 | 1 | 00:37:00 - 00:38:00 | |
| 155 | 1 | 00:38:00 - 00:39:00 | |
| 150 | 2 | 00:39:00 - 00:41:00 | |
| 145 | 2 | 00:41:00 - 00:43:00 | |
| 140 | 2 | 00:43:00 - 00:45:00 | |
| 135 | 2 | 00:45:00 - 00:47:00 | |
| 130 | 2 | 00:47:00 - 00:49:00 | |
| 125 | 2 | 00:49:00 - 00:51:00 | |
| 120 | 2 | 00:51:00 - 00:53:00 | |
| 115 | 2 | 00:53:00 - 00:55:00 | ↓ |
| 110 | 5 | 00:55:00 - 01:00:00 | Air |

Table A-5

FINAL SCHEDULE - 350-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|-------|
| 106 | 5 | 01:00:00 - 01:05:00 | Air |
| 102 | 5 | 01:05:00 - 01:10:00 | |
| 98 | 5 | 01:10:00 - 01:15:00 | |
| 94 | 5 | 01:15:00 - 01:20:00 | |
| 90 | 5 | 01:20:00 - 01:25:00 | |
| 86 | 5 | 01:25:00 - 01:30:00 | |
| 82 | 5 | 01:30:00 - 01:35:00 | |
| 78 | 5 | 01:35:00 - 01:40:00 | |
| 74 | 5 | 01:40:00 - 01:45:00 | |
| 70 | 5 | 01:45:00 - 01:50:00 | |
| 68 | 5 | 01:50:00 - 01:55:00 | |
| 66 | 5 | 01:55:00 - 02:00:00 | |
| 64 | 5 | 02:00:00 - 02:05:00 | |
| 62 | 5 | 02:05:00 - 02:10:00 | |
| 60 | 5 | 02:10:00 - 02:15:00 | |
| 58 | 5 | 02:15:00 - 02:20:00 | |
| 56 | 5 | 02:20:00 - 02:25:00 | |
| 54 | 5 | 02:25:00 - 02:30:00 | |
| 52 | 5 | 02:30:00 - 02:35:00 | |
| 50 | 5 | 02:35:00 - 02:40:00 | |
| 48 | 5 | 02:40:00 - 02:45:00 | |
| 46 | 5 | 02:45:00 - 02:50:00 | |
| 44 | 5 | 02:50:00 - 02:55:00 | |
| 42 | 5 | 02:55:00 - 03:00:00 | |
| 40 | 8 | 03:00:00 - 03:08:00 | Air |
| 38 | 8 | 03:08:00 - 03:16:00 | |
| 36 | 8 | 03:16:00 - 03:24:00 | |
| 34 | 8 | 03:24:00 - 03:32:00 | |
| 32 | 8 | 03:32:00 - 03:40:00 | |
| 30 | 16 | 03:40:00 - 03:56:00 | |
| 28 | 16 | 03:56:00 - 04:12:00 | |
| 26 | 16 | 04:12:00 - 04:28:00 | |
| 24 | 16 | 04:28:00 - 04:44:00 | |
| 22 | 16 | 04:44:00 - 05:00:00 | |

Table A-5

FINAL SCHEDULE - 350-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|-------|
| 20 | 18 | 05:00:00 - 05:18:00 | 02 |
| 18 | 18 | 05:18:00 - 05:36:00 | ↓ |
| 16 | 18 | 05:36:00 - 05:54:00 | Air |
| 14 | 18 | 05:54:00 - 06:12:00 | ↓ |
| 12 | 18 | 06:12:00 - 06:30:00 | 02 |
| 10 | 18 | 06:30:00 - 06:48:00 | ↓ |
| 10 | 30 | 06:48:00 - 07:18:00 | Air |
| 10 | 30 | 07:18:00 - 07:48:00 | 02 |
| 10 | 30 | 07:48:00 - 08:18:00 | Air |
| 10 | 30 | 08:18:00 - 08:48:00 | 02 |
| 10 | 30 | 08:48:00 - 09:18:00 | Air |
| 10 | 20 | 09:18:00 - 09:38:00 | 02 |
| 10-0 | 10 | 09:38:00 - 09:48:00 | 02 |

Times at the decompression stops include the time required for travel to next stop.

Bends-free Man-Dives: 4
Decompression Sickness: 0

Table A-6

FINAL SCHEDULE - 350-FOOT/60-MINUTE

| Depth (ft) | Time (min) | Elapsed Time (hr.min:sec) | Media |
|------------|------------|---------------------------|---------------------------------------|
| 0-125 | 1.67 | 00:00:00 - 00:01:40 | Air HeO ₂ 87/13 ↓ |
| 125 | 0.5 | 00:01:40 - 00:02:10 | |
| 125-350 | 3 | 00:02:10 - 00:05:10 | |
| 350 | 54.83 | 00:05:10 - 01:00:00 | |
| 350-250 | 2 | 01:00:00 - 01:02:00 | HeO ₂ 80/20 ↓ |
| 250-200 | 1 | 01:02:00 - 01:03:00 | |
| 200 | 1 | 01:03:00 - 01:04:00 | ↓ |
| 195 | 1 | 01:04:00 - 01:05:00 | |
| 190 | 1 | 01:05:00 - 01:06:00 | |
| 185 | 1 | 01:06:00 - 01:07:00 | |
| 180 | 1 | 01:07:00 - 01:08:00 | |
| 175 | 1 | 01:08:00 - 01:09:00 | |
| 170 | 1 | 01:09:00 - 01:10:00 | |
| 165 | 1 | 01:10:00 - 01:11:00 | |
| 160 | 2 | 01:11:00 - 01:13:00 | |
| 156 | 2 | 01:13:00 - 01:15:00 | |
| 152 | 2 | 01:15:00 - 01:17:00 | |
| 148 | 2 | 01:17:00 - 01:19:00 | |
| 144 | 2 | 01:19:00 - 01:21:00 | |
| 140 | 2 | 01:21:00 - 01:23:00 | |
| 136 | 2 | 01:23:00 - 01:25:00 | |
| 132 | 2 | 01:25:00 - 01:27:00 | |
| 130 | 2 | 01:27:00 - 01:29:00 | |
| 128 | 2 | 01:29:00 - 01:31:00 | |
| 126 | 2 | 01:31:00 - 01:33:00 | |
| 124 | 2 | 01:33:00 - 01:35:00 | |

Table A-6

FINAL SCHEDULE - 350-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|--------------------------------|
| 122 | 2 | 01:35:00 - 01:37:00 | HeO ₂ 80/20 ↓ |
| 120 | 2 | 01:37:00 - 01:39:00 | |
| 118 | 2 | 01:39:00 - 01:41:00 | |
| 116 | 2 | 01:41:00 - 01:43:00 | |
| 114 | 2 | 01:43:00 - 01:45:00 | |
| 112 | 2 | 01:45:00 - 01:47:00 | |
| 110 | 2 | 01:47:00 - 01:49:00 | |
| 108 | 2 | 01:49:00 - 01:51:00 | |
| 106 | 2 | 01:51:00 - 01:53:00 | |
| 104 | 2 | 01:53:00 - 01:55:00 | |
| 102 | 2 | 01:55:00 - 01:57:00 | |
| 100 | 3 | 01:57:00 - 02:00:00 | Air ↓ |
| 98 | 3 | 02:00:00 - 02:03:00 | |
| 96 | 3 | 02:03:00 - 02:06:00 | |
| 94 | 3 | 02:06:00 - 02:09:00 | |
| 92 | 3 | 02:09:00 - 02:12:00 | |
| 90 | 3 | 02:12:00 - 02:15:00 | |
| 88 | 3 | 02:15:00 - 02:18:00 | |
| 86 | 3 | 02:18:00 - 02:21:00 | |
| 84 | 3 | 02:21:00 - 02:24:00 | |
| 82 | 3 | 02:24:00 - 02:27:00 | |
| 80 | 3 | 02:27:00 - 02:30:00 | |
| 78 | 3 | 02:30:00 - 02:33:00 | |
| 76 | 3 | 02:33:00 - 02:36:00 | |
| 74 | 3 | 02:36:00 - 02:39:00 | |
| 72 | 3 | 02:39:00 - 02:42:00 | |

Table A-6

FINAL SCHEDULE - 350-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------------|
| 70 | 10 | 02:42:00 - 02:52:00 | Air ↓ |
| 68 | 10 | 02:52:00 - 03:02:00 | |
| 66 | 10 | 03:02:00 - 03:12:00 | |
| 64 | 10 | 03:12:00 - 03:22:00 | |
| 62 | 10 | 03:22:00 - 03:32:00 | |
| 60 | 10 | 03:32:00 - 03:42:00 | |
| 58 | 10 | 03:42:00 - 03:52:00 | |
| 56 | 10 | 03:52:00 - 04:02:00 | |
| 54 | 10 | 04:02:00 - 04:12:00 | |
| 52 | 10 | 04:12:00 - 04:22:00 | |
| 50 | 10 | 04:22:00 - 04:32:00 | |
| 48 | 10 | 04:32:00 - 04:42:00 | |
| 46 | 10 | 04:42:00 - 04:52:00 | |
| 44 | 10 | 04:52:00 - 05:02:00 | |
| 42 | 10 | 05:02:00 - 05:12:00 | |
| 40 | 21 | 05:12:00 - 05:33:00 | |
| 38 | 21 | 05:33:00 - 05:54:00 | |
| 36 | 21 | 05:54:00 - 06:15:00 | |
| 34 | 21 | 06:15:00 - 06:36:00 | |
| 32 | 21 | 06:36:00 - 06:57:00 | |
| 30 | 21 | 06:57:00 - 07:18:00 | |
| 28 | 21 | 07:18:00 - 07:39:00 | |
| 26 | 21 | 07:39:00 - 08:00:00 | |
| 24 | 21 | 08:00:00 - 08:21:00 | |
| 22 | 21 | 08:21:00 - 08:42:00 | |
| 20 | 30 | 08:42:00 - 09:12:00 | O ₂ |
| 18 | 30 | 09:12:00 - 09:42:00 | Air |
| 16 | 30 | 09:42:00 - 10:12:00 | O ₂ |
| 14 | 30 | 10:12:00 - 10:42:00 | Air |
| 12 | 30 | 10:42:00 - 11:12:00 | O ₂ |

Table A-6

FINAL SCHEDULE - 350-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------------|
| 10 | 30 | 11:12:00 - 11:42:00 | Air |
| 10 | 30 | 11:42:00 - 12:12:00 | O ₂ |
| 10 | 30 | 12:12:00 - 12:42:00 | Air |
| 10 | 30 | 12:42:00 - 13:12:00 | O ₂ |
| 10 | 30 | 13:12:00 - 13:42:00 | Air |
| 10 | 20 | 13:42:00 - 14:02:00 | O ₂ |
| 10-0 | 10 | 14:02:00 - 14:12:00 | O ₂ |

Times at the decompression stops include the time required for travel to next stop.

Bends-free Man-Dives: 1
 Decompression Sickness: 1
 Divers Accompanying Treatment: 0

Table A-7

FINAL SCHEDULE -400-FOOT/15-MINUTE

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|------------------|
| 0-100 | 1 | 00:00:00 - 00:01:00 | Air |
| 100 | 0.5 | 00:01:00 - 00:01:30 | HeO ₂ |
| 100-400 | 4 | 00:01:30 - 00:05:30 | 90/10 |
| 400 | 9.5 | 00:05:30 - 00:15:00 | ↓ |
| 400-220 | 3 | 00:15:00 - 00:18:00 | |
| 220-200 | 1 | 00:18:00 - 00:19:00 | ↓ |
| 200 | 1 | 00:19:00 - 00:20:00 | HeO ₂ |
| 190 | 1 | 00:20:00 - 00:21:00 | 80/20 |
| 180 | 1 | 00:21:00 - 00:22:00 | ↓ |
| 170 | 2 | 00:22:00 - 00:24:00 | |
| 160 | 1 | 00:24:00 - 00:25:00 | |
| 150 | 2 | 00:25:00 - 00:27:00 | |
| 140 | 2 | 00:27:00 - 00:29:00 | |
| 130 | 2 | 00:29:00 - 00:31:00 | |
| 120 | 5 | 00:31:00 - 00:36:00 | |
| 110 | 5 | 00:36:00 - 00:41:00 | |
| 100 | 5 | 00:41:00 - 00:46:00 | Air |
| 90 | 5 | 00:46:00 - 00:51:00 | ↓ |
| 80 | 15 | 00:51:00 - 01:06:00 | |
| 70 | 10 | 01:06:00 - 01:16:00 | |
| 60 | 15 | 01:16:00 - 01:31:00 | |
| 50 | 15 | 01:31:00 - 01:46:00 | |
| 40 | 35 | 01:46:00 - 02:21:00 | ↓ |
| 30 | 30 | 02:21:00 - 02:51:00 | O ₂ |
| 30 | 15 | 02:51:00 - 03:06:00 | Air |

Table A-7

FINAL SCHEDULE - 400-FOOT/15-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------------|
| 20 | 15 | 03:06:00 - 03:21:00 | Air |
| 20 | 30 | 03:21:00 - 03:51:00 | O ₂ |
| 20 | 30 | 03:51:00 - 04:21:00 | Air |
| 20 | 30 | 04:21:00 - 04:51:00 | O ₂ |
| 10 | 30 | 04:51:00 - 05:21:00 | Air |
| 10 | 30 | 05:21:00 - 05:51:00 | O ₂ |
| 10 | 30 | 05:51:00 - 06:21:00 | Air |
| 10 | 30 | 06:21:00 - 06:51:00 | O ₂ |
| 10 | 30 | 06:51:00 - 07:21:00 | Air |
| 10 | 30 | 07:21:00 - 07:51:00 | O ₂ |
| 10-0 | 10 Sec | 07:51:00 - 07:51:10 | O ₂ |

Times at the decompression stops include the time required for travel to next stop.

Bends-free Man-Dives: 4
 Decompression Sickness: 1
 Divers Accompanying Treatment: 0

Table A-8

FINAL SCHEDULE - 400-FOOT/30-MINUTE

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------------------------------|
| 0-100 | 2 | 00:00:00 - 00:02:00 | Air HeO ₂ 90/10 |
| 100 | 0.5 | 00:02:00 - 00:02:30 | |
| 100-400 | 3 | 00:02:30 - 00:05:30 | |
| 400 | 24.5 | 00:05:30 - 00:30:00 | |
| 400-340 | 1 | 00:30:00 - 00:31:00 | HeO ₂ 80/20 |
| 340-280 | 1 | 00:31:00 - 00:32:00 | |
| 280-220 | 1 | 00:32:00 - 00:33:00 | |
| 220 | 1 | 00:33:00 - 00:34:00 | |
| 215 | 1 | 00:34:00 - 00:35:00 | |
| 210 | 1 | 00:35:00 - 00:36:00 | |
| 205 | 1 | 00:36:00 - 00:37:00 | |
| 200 | 1 | 00:37:00 - 00:38:00 | |
| 195 | 1 | 00:38:00 - 00:39:00 | |
| 190 | 1 | 00:39:00 - 00:40:00 | |
| 185 | 1 | 00:40:00 - 00:41:00 | |
| 180 | 2 | 00:41:00 - 00:43:00 | |
| 175 | 2 | 00:43:00 - 00:45:00 | |
| 170 | 2 | 00:45:00 - 00:47:00 | |
| 165 | 2 | 00:47:00 - 00:49:00 | |
| 160 | 2 | 00:49:00 - 00:51:00 | |
| 155 | 2 | 00:51:00 - 00:53:00 | |
| 150 | 2 | 00:53:00 - 00:55:00 | |
| 145 | 2 | 00:55:00 - 00:57:00 | |
| 140 | 4 | 00:57:00 - 01:01:00 | |
| 135 | 4 | 01:01:00 - 01:05:00 | |
| 130 | 4 | 01:05:00 - 01:09:00 | |
| 125 | 4 | 01:09:00 - 01:13:00 | |
| 120 | 4 | 01:13:00 - 01:17:00 | |
| 115 | 4 | 01:17:00 - 01:21:00 | |
| 110 | 4 | 01:21:00 - 01:25:00 | |
| 105 | 4 | 01:25:00 - 01:29:00 | |

Table A-8

FINAL SCHEDULE - 400-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------|
| 100 | 3 | 01:29:00 - 01:32:00 | Air ↓ |
| 98 | 3 | 01:32:00 - 01:35:00 | |
| 96 | 3 | 01:35:00 - 01:38:00 | |
| 94 | 3 | 01:38:00 - 01:41:00 | |
| 92 | 3 | 01:41:00 - 01:44:00 | |
| 90 | 3 | 01:44:00 - 01:47:00 | |
| 88 | 3 | 01:47:00 - 01:50:00 | |
| 86 | 3 | 01:50:00 - 01:53:00 | |
| 84 | 3 | 01:53:00 - 01:56:00 | |
| 82 | 3 | 01:56:00 - 01:59:00 | |
| 80 | 4 | 01:59:00 - 02:03:00 | |
| 78 | 4 | 02:03:00 - 02:07:00 | |
| 76 | 4 | 02:07:00 - 02:11:00 | |
| 74 | 4 | 02:11:00 - 02:15:00 | |
| 72 | 4 | 02:15:00 - 02:19:00 | |
| 70 | 4 | 02:19:00 - 02:23:00 | |
| 68 | 4 | 02:23:00 - 02:27:00 | |
| 66 | 4 | 02:27:00 - 02:31:00 | |
| 64 | 4 | 02:31:00 - 02:35:00 | |
| 62 | 4 | 02:35:00 - 02:39:00 | |
| 60 | 6 | 02:39:00 - 02:45:00 | ↓ |
| 58 | 6 | 02:45:00 - 02:51:00 | |
| 56 | 6 | 02:51:00 - 02:57:00 | |
| 54 | 6 | 02:57:00 - 03:03:00 | |
| 52 | 6 | 03:03:00 - 03:09:00 | |
| 50 | 8 | 03:09:00 - 03:17:00 | |
| 48 | 8 | 03:17:00 - 03:25:00 | |
| 46 | 8 | 03:25:00 - 03:33:00 | |
| 44 | 8 | 03:33:00 - 03:41:00 | |
| 42 | 8 | 03:41:00 - 03:49:00 | |

Table A-8

FINAL SCHEDULE - 400-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|--|
| 40 | 16 | 03:49:00 - 04:05:00 | Air ↓ O ₂ Air O ₂ Air O ₂ |
| 38 | 16 | 04:05:00 - 04:21:00 | |
| 36 | 16 | 04:21:00 - 04:37:00 | |
| 34 | 16 | 04:37:00 - 04:53:00 | |
| 32 | 16 | 04:53:00 - 05:09:00 | |
| 30 | 20 | 05:09:00 - 05:29:00 | |
| 28 | 20 | 05:29:00 - 05:49:00 | |
| 26 | 20 | 05:49:00 - 06:09:00 | |
| 24 | 20 | 06:09:00 - 06:29:00 | |
| 22 | 20 | 06:29:00 - 06:49:00 | |
| 20 | 25 | 06:49:00 - 07:14:00 | O ₂ Air O ₂ Air O ₂ |
| 18 | 25 | 07:14:00 - 07:39:00 | |
| 16 | 25 | 07:39:00 - 08:04:00 | |
| 14 | 25 | 08:04:00 - 08:29:00 | |
| 12 | 25 | 08:29:00 - 08:54:00 | |
| 10 | 30 | 08:54:00 - 09:24:00 | Air O ₂ Air O ₂ Air O ₂ |
| 10 | 30 | 09:24:00 - 09:54:00 | |
| 10 | 30 | 09:54:00 - 10:24:00 | |
| 10 | 30 | 10:24:00 - 10:54:00 | |
| 10 | 30 | 10:54:00 - 11:24:00 | |
| 10 | 20 | 11:24:00 - 11:44:00 | |
| 10-0 | 10 | 11:44:00 - 11:54:00 | O ₂ |

Times at the decompression stops include the time required for travel to next stop.

Bends-free Man-Dives: 8
Decompression Sickness: 0

Table A-9

FINAL SCHEDULE - 400-FOOT/60-MINUTE

| Depth (ft.) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|-------------|------------|---------------------------|------------------|
| 0-50 | 1 | 00:00:00 - 00:01:00 | Air |
| 50-100 | 1 | 00:01:00 - 00:02:00 | ↓ |
| 100-200 | 1 | 00:02:00 - 00:03:00 | HeO ₂ |
| 200-300 | 1 | 00:03:00 - 00:04:00 | 90/10 |
| 300-400 | 1 | 00:04:00 - 00:05:00 | ↓ |
| 400 | 55 | 00:05:00 - 01:00:00 | ↓ |
| 400-350 | 1 | 01:00:00 - 01:01:00 | ↓ |
| 350-300 | 1 | 01:01:00 - 01:02:00 | ↓ |
| 300-250 | 1 | 01:02:00 - 01:03:00 | ↓ |
| 250 | 3 | 01:03:00 - 01:06:00 | ↓ |
| 240 | 3 | 01:06:00 - 01:09:00 | ↓ |
| 230 | 3 | 01:09:00 - 01:12:00 | ↓ |
| 220 | 3 | 01:12:00 - 01:15:00 | ↓ |
| 210 | 3 | 01:15:00 - 01:18:00 | ↓ |
| 200 | 7 | 01:18:00 - 01:25:00 | HeO ₂ |
| 190 | 7 | 01:25:00 - 01:32:00 | 80/20 |
| 180 | 7 | 01:32:00 - 01:39:00 | ↓ |
| 170 | 7 | 01:39:00 - 01:46:00 | ↓ |
| 160 | 7 | 01:46:00 - 01:53:00 | ↓ |
| 150 | 2 | 01:53:00 - 01:55:00 | ↓ |
| 148 | 2 | 01:55:00 - 01:57:00 | ↓ |
| 146 | 2 | 01:57:00 - 01:59:00 | ↓ |
| 144 | 2 | 01:59:00 - 02:01:00 | ↓ |
| 142 | 2 | 02:01:00 - 02:03:00 | ↓ |
| 140 | 2 | 02:03:00 - 02:05:00 | ↓ |
| 138 | 2 | 02:05:00 - 02:07:00 | ↓ |
| 136 | 2 | 02:07:00 - 02:09:00 | ↓ |
| 134 | 2 | 02:09:00 - 02:11:00 | ↓ |
| 132 | 2 | 02:11:00 - 02:13:00 | ↓ |
| 130 | 2 | 02:13:00 - 02:15:00 | ↓ |
| 128 | 2 | 02:15:00 - 02:17:00 | ↓ |
| 126 | 2 | 02:17:00 - 02:19:00 | ↓ |
| 124 | 2 | 02:19:00 - 02:21:00 | ↓ |
| 122 | 2 | 02:21:00 - 02:23:00 | ↓ |

Table A-9

FINAL SCHEDULE - 400-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|-------|
| 120 | 4 | 02:23:00 - 02:27:00 | Air |
| 118 | 4 | 02:27:00 - 02:31:00 | |
| 116 | 4 | 02:31:00 - 02:35:00 | |
| 114 | 4 | 02:35:00 - 02:39:00 | |
| 112 | 4 | 02:39:00 - 02:43:00 | |
| 110 | 4 | 02:43:00 - 02:47:00 | |
| 108 | 4 | 02:47:00 - 02:51:00 | |
| 106 | 4 | 02:51:00 - 02:55:00 | |
| 104 | 4 | 02:55:00 - 02:59:00 | |
| 102 | 4 | 02:59:00 - 03:03:00 | |
| 100 | 4 | 03:03:00 - 03:07:00 | |
| 98 | 4 | 03:07:00 - 03:11:00 | |
| 96 | 4 | 03:11:00 - 03:15:00 | |
| 94 | 4 | 03:15:00 - 03:19:00 | |
| 92 | 4 | 03:19:00 - 03:23:00 | |
| 90 | 6 | 03:23:00 - 03:29:00 | |
| 88 | 6 | 03:29:00 - 03:35:00 | |
| 86 | 6 | 03:35:00 - 03:41:00 | |
| 84 | 6 | 03:41:00 - 03:47:00 | |
| 82 | 6 | 03:47:00 - 03:53:00 | |
| 80 | 6 | 03:53:00 - 03:59:00 | |
| 78 | 6 | 03:59:00 - 04:05:00 | |
| 76 | 6 | 04:05:00 - 04:11:00 | |
| 74 | 6 | 04:11:00 - 04:17:00 | |
| 72 | 6 | 04:17:00 - 04:23:00 | |
| 70 | 18 | 04:23:00 - 04:41:00 | |
| 68 | 18 | 04:41:00 - 04:59:00 | |
| 66 | 18 | 04:59:00 - 05:17:00 | |
| 64 | 18 | 05:17:00 - 05:35:00 | |
| 62 | 18 | 05:35:00 - 05:53:00 | |
| 60 | 18 | 05:53:00 - 06:11:00 | |
| 58 | 18 | 06:11:00 - 06:29:00 | |
| 56 | 18 | 06:29:00 - 06:47:00 | |
| 54 | 18 | 06:47:00 - 07:05:00 | |
| 52 | 18 | 07:05:00 - 07:23:00 | |

Table A-9

FINAL SCHEDULE - 400-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|---|
| 50 | 26 | 07:23:00 - 07:49:00 | Air |
| 48 | 26 | 07:49:00 - 08:15:00 | |
| 46 | 26 | 08:15:00 - 08:41:00 | |
| 44 | 26 | 08:41:00 - 09:07:00 | |
| 42 | 26 | 09:07:00 - 09:33:00 | |
| 40 | 26 | 09:33:00 - 09:59:00 | |
| 38 | 26 | 09:59:00 - 10:25:00 | |
| 36 | 26 | 10:25:00 - 10:51:00 | |
| 34 | 26 | 10:51:00 - 11:17:00 | |
| 32 | 26 | 11:17:00 - 11:43:00 | |
| 30 | 28 | 11:43:00 - 12:11:00 | ↓ O ₂ Air O ₂ Air O ₂ ↓ Air O ₂ Air O ₂ Air O ₂ O ₂ |
| 28 | 28 | 12:11:00 - 12:39:00 | |
| 26 | 28 | 12:39:00 - 13:07:00 | |
| 24 | 28 | 13:07:00 - 13:35:00 | |
| 22 | 28 | 13:35:00 - 14:03:00 | |
| 20 | 30 | 14:03:00 - 14:33:00 | |
| 18 | 30 | 14:33:00 - 15:03:00 | |
| 16 | 30 | 15:03:00 - 15:33:00 | |
| 14 | 30 | 15:33:00 - 16:03:00 | |
| 12 | 30 | 16:03:00 - 16:33:00 | |
| 10 | 30 | 16:33:00 - 17:03:00 | Air O ₂ Air O ₂ Air O ₂ O ₂ |
| 10 | 30 | 17:03:00 - 17:33:00 | |
| 10 | 30 | 17:33:00 - 18:03:00 | |
| 10 | 30 | 18:03:00 - 18:33:00 | |
| 10 | 30 | 18:33:00 - 19:03:00 | |
| 10 | 20 | 19:03:00 - 19:23:00 | |
| 10-0 | 10 | 19:23:00 - 19:33:00 | |

Times at the decompression stops include the time required for travel to next stop.

Bends-free Man-Dives: 8

Decompression Sickness: 1

Divers Accompanying Treatment: 2

Table A-10

FINAL SCHEDULE - 450 FOOT/15-MINUTE

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|------------------|
| 0-100 | 1 | 00:00:00 - 00:01:00 | Air |
| 100-450 | 4 | 00:01:00 - 00:05:00 | HeO ₂ |
| 450 | 10 | 00:05:00 - 00:15:00 | 90/10 |
| 450-270 | 3 | 00:15:00 - 00:18:00 | |
| 270-230 | 1 | 00:18:00 - 00:19:00 | |
| 230 | 1 | 00:19:00 - 00:20:00 | |
| 220 | 1 | 00:20:00 - 00:21:00 | |
| 210 | 2 | 00:21:00 - 00:23:00 | |
| 200 | 1 | 00:23:00 - 00:24:00 | |
| 190 | 2 | 00:24:00 - 00:26:00 | |
| 180 | 1 | 00:26:00 - 00:27:00 | |
| 170 | 2 | 00:27:00 - 00:29:00 | |
| 160 | 1 | 00:29:00 - 00:30:00 | |
| 150 | 5 | 00:30:00 - 00:35:00 | |
| 140 | 5 | 00:35:00 - 00:40:00 | |
| 130 | 5 | 00:40:00 - 00:45:00 | |
| 120 | 5 | 00:45:00 - 00:50:00 | |
| 110 | 5 | 00:50:00 - 00:55:00 | |
| 100 | 5 | 00:55:00 - 01:00:00 | |
| 96 | 10 | 01:00:00 - 01:10:00 | |
| 80 | 15 | 01:10:00 - 01:25:00 | |
| 70 | 15 | 01:25:00 - 01:40:00 | |
| 60 | 15 | 01:40:00 - 01:55:00 | |
| 50 | 30 | 01:55:00 - 02:25:00 | |
| 40 | 40 | 02:25:00 - 03:05:00 | |
| 30 | 30 | 03:05:00 - 03:35:00 | |
| 30 | 30 | 03:35:00 - 04:05:00 | |
| 30 | 30 | 04:05:00 - 04:35:00 | |
| 20 | 30 | 04:35:00 - 05:05:00 | |
| 20 | 30 | 05:05:00 - 05:35:00 | |
| 20 | 30 | 05:35:00 - 06:05:00 | |
| 20 | 30 | 06:05:00 - 06:35:00 | |

Table A-10

FINAL SCHEDULE - 450 FOOT/15-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------------|
| 10 | 30 | 06:35:00 - 07:05:00 | Air |
| 10 | 30 | 07:05:00 - 17:35:00 | O ₂ |
| 10 | 30 | 07:35:00 - 08:05:00 | Air |
| 10 | 30 | 08:05:00 - 08:35:00 | O ₂ |
| 10 | 85 | 08:35:00 - 10:00:00 | Air |
| 10-0 | 10 | 10:00:00 - 10:00:10 | Air |

Times at the decompression stops include the time required for travel to the next stop.

Bends-free Man-Dives: 2
Decompression Sickness: 0

Table A-11

FINAL SCHEDULE - 450-FOOT/30-MINUTE

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|--|
| 0-75 | 1 | 00:00:00 - 00:01:00 | Air ↓ HeO ₂ 92/08 ↓ |
| 75-150 | 1 | 00:01:00 - 00:02:00 | |
| 150-450 | 3 | 00:02:00 - 00:05:00 | |
| 450 | 25 | 00:05:00 - 00:30:00 | |
| 450-270 | 3 | 00:30:00 - 00:33:00 | HeO ₂ 80/20 ↓ |
| 270 | 1 | 00:33:00 - 00:34:00 | |
| 260 | 1 | 00:34:00 - 00:35:00 | |
| 250 | 2 | 00:35:00 - 00:37:00 | |
| 240 | 2 | 00:37:00 - 00:39:00 | |
| 230 | 2 | 00:39:00 - 00:41:00 | |
| 220 | 3 | 00:41:00 - 00:44:00 | |
| 216 | 2 | 00:44:00 - 00:46:00 | |
| 206 | 2 | 00:46:00 - 00:48:00 | |
| 202 | 2 | 00:48:00 - 00:50:00 | |
| 198 | 2 | 00:50:00 - 00:52:00 | |
| 194 | 2 | 00:52:00 - 00:54:00 | |
| 190 | 2 | 00:54:00 - 00:56:00 | |
| 186 | 2 | 00:56:00 - 00:58:00 | |
| 182 | 2 | 00:58:00 - 01:00:00 | |
| 178 | 2 | 01:00:00 - 01:02:00 | |
| 174 | 2 | 01:02:00 - 01:04:00 | |
| 170 | 2 | 01:04:00 - 01:06:00 | |
| 166 | 2 | 01:06:00 - 01:08:00 | |
| 162 | 2 | 01:08:00 - 01:10:00 | |
| 158 | 2 | 01:10:00 - 01:12:00 | |
| 154 | 2 | 01:12:00 - 01:14:00 | |
| 150 | 3 | 01:14:00 - 01:17:00 | ↓ |
| 146 | 3 | 01:17:00 - 01:20:00 | |
| 142 | 3 | 01:20:00 - 01:23:00 | |
| 138 | 3 | 01:23:00 - 01:26:00 | |
| 134 | 3 | 01:26:00 - 01:29:00 | |

Table A-11

FINAL SCHEDULE - 450-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|-------|
| 130 | 2 | 01:29:00 - 01:31:00 | Air |
| 128 | 2 | 01:31:00 - 01:33:00 | |
| 126 | 2 | 01:33:00 - 01:35:00 | |
| 124 | 2 | 01:35:00 - 01:37:00 | |
| 122 | 2 | 01:37:00 - 01:39:00 | |
| 120 | 2 | 01:39:00 - 01:41:00 | |
| 118 | 2 | 01:41:00 - 01:43:00 | |
| 116 | 2 | 01:43:00 - 01:45:00 | |
| 114 | 2 | 01:45:00 - 01:47:00 | |
| 112 | 2 | 01:47:00 - 01:49:00 | |
| 110 | 2 | 01:49:00 - 01:51:00 | |
| 108 | 2 | 01:51:00 - 01:53:00 | |
| 106 | 2 | 01:53:00 - 01:55:00 | |
| 104 | 2 | 01:55:00 - 01:57:00 | |
| 102 | 2 | 01:57:00 - 01:59:00 | |
| 100 | 2 | 01:59:00 - 02:01:00 | |
| 98 | 2 | 02:01:00 - 02:03:00 | ↓ |
| 96 | 2 | 02:03:00 - 02:05:00 | |
| 94 | 2 | 02:05:00 - 02:07:00 | |
| 92 | 2 | 02:07:00 - 02:09:00 | |
| 90 | 6 | 02:09:00 - 02:15:00 | |
| 88 | 6 | 02:15:00 - 02:21:00 | |
| 86 | 6 | 02:21:00 - 02:27:00 | |
| 84 | 6 | 02:27:00 - 02:33:00 | |
| 82 | 6 | 02:33:00 - 02:39:00 | |
| 80 | 6 | 02:39:00 - 02:45:00 | |
| 78 | 6 | 02:45:00 - 02:51:00 | |
| 76 | 6 | 02:51:00 - 02:57:00 | |
| 74 | 6 | 02:57:00 - 03:03:00 | |
| 72 | 6 | 03:03:00 - 03:09:00 | |

Table A-11

FINAL SCHEDULE - 450-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------|
| 70 | 6 | 03:09:00 - 03:15:00 | Air ↓ |
| 68 | 6 | 03:15:00 - 03:21:00 | |
| 66 | 6 | 03:21:00 - 03:27:00 | |
| 64 | 6 | 03:27:00 - 03:33:00 | |
| 62 | 6 | 03:33:00 - 03:39:00 | |
| 60 | 6 | 03:39:00 - 03:45:00 | |
| 58 | 6 | 03:45:00 - 03:51:00 | |
| 56 | 6 | 03:51:00 - 03:57:00 | |
| 54 | 6 | 03:57:00 - 04:03:00 | |
| 52 | 6 | 04:03:00 - 04:09:00 | |
| 50 | 18 | 04:09:00 - 04:27:00 | |
| 48 | 18 | 04:27:00 - 04:45:00 | |
| 46 | 18 | 04:45:00 - 05:03:00 | |
| 44 | 18 | 05:03:00 - 05:21:00 | |
| 42 | 18 | 05:21:00 - 05:39:00 | |
| 40 | 18 | 05:39:00 - 05:57:00 | |
| 38 | 18 | 05:57:00 - 06:15:00 | |
| 36 | 18 | 06:15:00 - 06:33:00 | |
| 34 | 18 | 06:33:00 - 06:51:00 | |
| 32 | 18 | 06:51:00 - 07:09:00 | |
| 30 | 20 | 07:09:00 - 07:29:00 | 02 |
| 28 | 30 | 07:29:00 - 07:59:00 | Air |
| 26 | 20 | 07:59:00 - 08:19:00 | 02 |
| 24 | 30 | 08:19:00 - 08:49:00 | Air |
| 22 | 20 | 08:49:00 - 09:09:00 | 02 |
| 20 | 30 | 09:09:00 - 09:39:00 | Air |
| 18 | 20 | 09:39:00 - 09:59:00 | 02 |
| 16 | 30 | 09:59:00 - 10:29:00 | Air |
| 14 | 20 | 10:29:00 - 10:49:00 | 02 |
| 12 | 30 | 10:49:00 - 11:19:00 | Air |

Table A-11

FINAL SCHEDULE - 450-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------------|
| 10 | 30 | 11:19:00 - 11:49:00 | O ₂ |
| 10 | 40 | 11:49:00 - 12:29:00 | Air |
| 10 | 30 | 12:29:00 - 12:59:00 | O ₂ |
| 10 | 40 | 12:59:00 - 13:39:00 | Air |
| 10 | 20 | 13:39:00 - 13:59:00 | O ₂ |
| 10-0 | 10 | 13:59:00 - 14:09:00 | O ₂ |

Times at the decompression stops include the time required for travel to next stop.

Bends-free Man-Dives: 9 (Including 2 man-dives with short bottom times)

Decompression Sickness: 1

Divers Accompanying Treatment: 0

Table A-12

FINAL SCHEDULE - 450-FOOT/60-MINUTE

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|---------------------------------------|
| 0-75 | 1 | 00:00:00 - 00:01:00 | Air HeO ₂ 92/08 ↓ |
| 75-150 | 1 | 00:01:00 - 00:02:00 | |
| 150-250 | 1 | 00:02:00 - 00:03:00 | |
| 250-350 | 1 | 00:03:00 - 00:04:00 | |
| 350-450 | 1 | 00:04:00 - 00:05:00 | |
| 450 | 55 | 00:05:00 - 01:00:00 | |
| 450-400 | 1 | 01:00:00 - 01:01:00 | ↓ |
| 400-350 | 1 | 01:01:00 - 01:02:00 | |
| 350-300 | 1 | 01:02:00 - 01:03:00 | |
| 300 | 1 | 01:03:00 - 01:04:00 | |
| 290 | 2 | 01:04:00 - 01:06:00 | |
| 280 | 2 | 01:06:00 - 01:08:00 | |
| 275 | 2 | 01:08:00 - 01:10:00 | |
| 270 | 2 | 01:10:00 - 01:12:00 | |
| 265 | 2 | 01:12:00 - 01:14:00 | |
| 260 | 2 | 01:14:00 - 01:16:00 | |
| 255 | 2 | 01:16:00 - 01:18:00 | |
| 250 | 2 | 01:18:00 - 01:20:00 | |
| 245 | 2 | 01:20:00 - 01:22:00 | |
| 240 | 2 | 01:22:00 - 01:24:00 | |
| 236 | 2 | 01:24:00 - 01:26:00 | |
| 232 | 2 | 01:26:00 - 01:28:00 | |
| 228 | 2 | 01:28:00 - 01:30:00 | |
| 224 | 2 | 01:30:00 - 01:32:00 | |
| 220 | 2 | 01:32:00 - 01:34:00 | |
| 218 | 2 | 01:34:00 - 01:36:00 | |
| 216 | 2 | 01:36:00 - 01:38:00 | |
| 214 | 2 | 01:38:00 - 01:40:00 | |
| 212 | 2 | 01:40:00 - 01:42:00 | |
| 210 | 2 | 01:42:00 - 01:44:00 | |
| 208 | 2 | 01:44:00 - 01:46:00 | |
| 206 | 2 | 01:46:00 - 01:48:00 | |
| 204 | 2 | 01:48:00 - 01:50:00 | |
| 202 | 2 | 01:50:00 - 01:52:00 | |

Table A-12

FINAL SCHEDULE - 450-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|--------------------------------|
| 200 | 2 | 01:52:00 - 01:54:00 | HeO ₂ 80/20 ↓ |
| 198 | 2 | 01:54:00 - 01:56:00 | |
| 196 | 2 | 01:56:00 - 01:58:00 | |
| 194 | 2 | 01:58:00 - 02:00:00 | |
| 192 | 2 | 02:00:00 - 02:02:00 | |
| 190 | 2 | 02:02:00 - 02:04:00 | |
| 188 | 2 | 02:04:00 - 02:06:00 | |
| 186 | 2 | 02:06:00 - 02:08:00 | |
| 184 | 2 | 02:08:00 - 02:10:00 | |
| 182 | 2 | 02:10:00 - 02:12:00 | |
| 180 | 2 | 02:12:00 - 02:14:00 | |
| 178 | 2 | 02:14:00 - 02:16:00 | |
| 176 | 2 | 02:16:00 - 02:18:00 | |
| 174 | 2 | 02:18:00 - 02:20:00 | |
| 172 | 2 | 02:20:00 - 02:22:00 | |
| 170 | 2 | 02:22:00 - 02:24:00 | |
| 168 | 2 | 02:24:00 - 02:26:00 | |
| 166 | 2 | 02:26:00 - 02:28:00 | |
| 164 | 2 | 02:28:00 - 02:30:00 | |
| 162 | 2 | 02:30:00 - 02:32:00 | |
| 160 | 2 | 02:32:00 - 02:34:00 | |
| 158 | 2 | 02:34:00 - 02:36:00 | |
| 156 | 2 | 02:36:00 - 02:38:00 | |
| 154 | 2 | 02:38:00 - 02:40:00 | |
| 152 | 2 | 02:40:00 - 02:42:00 | |
| 150 | 2 | 02:42:00 - 02:44:00 | |
| 148 | 2 | 02:44:00 - 02:46:00 | |
| 146 | 2 | 02:46:00 - 02:48:00 | |
| 144 | 2 | 02:48:00 - 02:50:00 | |
| 142 | 2 | 02:50:00 - 02:52:00 | |
| 140 | 3 | 02:52:00 - 02:55:00 | Air ↓ |
| 138 | 3 | 02:55:00 - 02:58:00 | |
| 136 | 3 | 02:58:00 - 03:01:00 | |
| 134 | 3 | 03:01:00 - 03:04:00 | |
| 132 | 3 | 03:04:00 - 03:07:00 | |
| 130 | 3 | 03:07:00 - 03:10:00 | |
| 128 | 3 | 03:10:00 - 03:13:00 | |
| 126 | 3 | 03:13:00 - 03:16:00 | |
| 124 | 3 | 03:16:00 - 03:19:00 | |
| 122 | 3 | 03:19:00 - 03:22:00 | |

Table A-12

FINAL SCHEDULE - 450-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------|
| 120 | 4 | 03:22:00 - 03:26:00 | Air ↓ |
| 118 | 4 | 03:26:00 - 03:30:00 | |
| 116 | 4 | 03:30:00 - 03:34:00 | |
| 114 | 4 | 03:34:00 - 03:38:00 | |
| 112 | 4 | 03:38:00 - 03:42:00 | |
| 110 | 4 | 03:42:00 - 03:46:00 | |
| 108 | 4 | 03:46:00 - 03:50:00 | |
| 106 | 4 | 03:50:00 - 03:54:00 | |
| 104 | 4 | 03:54:00 - 03:58:00 | |
| 102 | 4 | 03:58:00 - 04:02:00 | |
| 100 | 12 | 04:02:00 - 04:14:00 | |
| 98 | 12 | 04:14:00 - 04:26:00 | |
| 96 | 12 | 04:26:00 - 04:38:00 | |
| 94 | 12 | 04:38:00 - 04:50:00 | |
| 92 | 12 | 04:50:00 - 05:02:00 | |
| 90 | 12 | 05:02:00 - 05:14:00 | |
| 88 | 12 | 05:14:00 - 05:26:00 | |
| 86 | 12 | 05:26:00 - 05:38:00 | |
| 84 | 12 | 05:38:00 - 05:50:00 | |
| 82 | 12 | 05:50:00 - 06:02:00 | |
| 80 | 16 | 06:02:00 - 06:18:00 | ↓ |
| 78 | 16 | 06:18:00 - 06:34:00 | |
| 76 | 16 | 06:34:00 - 06:50:00 | |
| 74 | 16 | 06:50:00 - 07:06:00 | |
| 72 | 16 | 07:06:00 - 07:22:00 | |
| 70 | 16 | 07:22:00 - 07:38:00 | |
| 68 | 16 | 07:38:00 - 07:54:00 | |
| 66 | 16 | 07:54:00 - 08:10:00 | |
| 64 | 16 | 08:10:00 - 08:26:00 | ↓ |
| 62 | 16 | 08:26:00 - 08:42:00 | |

Table A-12

FINAL SCHEDULE - 450-FOOT/60-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|---|
| 60 | 20 | 08:42:00 - 09:02:00 | Air |
| 58 | 20 | 09:02:00 - 09:22:00 | |
| 56 | 20 | 09:22:00 - 09:42:00 | |
| 54 | 20 | 09:42:00 - 10:02:00 | |
| 52 | 20 | 10:02:00 - 10:22:00 | |
| 50 | 20 | 10:22:00 - 10:42:00 | |
| 48 | 20 | 10:42:00 - 11:02:00 | |
| 46 | 20 | 11:02:00 - 11:22:00 | |
| 44 | 20 | 11:22:00 - 11:42:00 | |
| 42 | 20 | 11:42:00 - 12:02:00 | |
| 40 | 22 | 12:02:00 - 12:24:00 | ↓ O ₂ Air O ₂ |
| 38 | 22 | 12:24:00 - 12:46:00 | |
| 36 | 22 | 12:46:00 - 13:08:00 | |
| 34 | 22 | 13:08:00 - 13:30:00 | |
| 32 | 22 | 13:30:00 - 13:52:00 | |
| 30 | 30 | 13:52:00 - 14:22:00 | |
| 28 | 20 | 14:22:00 - 14:42:00 | |
| 26 | 30 | 14:42:00 - 15:12:00 | |
| 24 | 20 | 15:12:00 - 15:32:00 | |
| 22 | 30 | 15:32:00 - 16:02:00 | |
| 20 | 30 | 16:02:00 - 16:32:00 | Air O ₂ Air O ₂ Air O ₂ Air O ₂ Air O ₂ |
| 18 | 30 | 16:32:00 - 17:02:00 | |
| 16 | 30 | 17:02:00 - 17:32:00 | |
| 14 | 30 | 17:32:00 - 18:02:00 | |
| 12 | 30 | 18:02:00 - 18:32:00 | |
| 10 | 30 | 18:32:00 - 19:02:00 | |
| 10 | 30 | 19:02:00 - 19:32:00 | |
| 10 | 30 | 19:32:00 - 20:02:00 | |
| 10 | 30 | 20:02:00 - 20:32:00 | |
| 10 | 30 | 20:32:00 - 21:02:00 | |
| 10 | 20 | 21:02:00 - 21:22:00 | |
| 10-0 | 10 | 21:22:00 - 21:32:00 | |

Table A-12

FINAL SCHEDULE - 450-FOOT/60-MINUTE (Continued)

Times at the decompression stops include the time required for travel to next stop.

Bends-free Man-Dives: 9
Decompression Sickness: 1 (Possible)
Divers Accompanying Treatment: 0

Table A-13

FINAL SCHEDULE - 500-FOOT/30-MINUTE

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|-------|
| 0-100 | 1.33 | 00:00:00 - 00:01:20 | Air |
| 100-500 | 5.33 | 00:01:20 - 00:06:40 | He02 |
| 500 | 23.33 | 00:06:40 - 00:30:00 | 92/8 |
| 500-290 | 4 | 00:30:00 - 00:34:00 | |
| 290 | 2 | 00:34:00 - 00:36:00 | |
| 280 | 2 | 00:36:00 - 00:38:00 | |
| 270 | 2 | 00:38:00 - 00:40:00 | |
| 260 | 2 | 00:40:00 - 00:42:00 | |
| 250 | 2 | 00:42:00 - 00:44:00 | |
| 245 | 2 | 00:44:00 - 00:46:00 | |
| 240 | 2 | 00:46:00 - 00:48:00 | |
| 235 | 2 | 00:48:00 - 00:50:00 | |
| 230 | 2 | 00:50:00 - 00:52:00 | |
| 225 | 2 | 00:52:00 - 00:54:00 | |
| 220 | 2 | 00:54:00 - 00:56:00 | |
| 215 | 2 | 00:56:00 - 00:58:00 | |
| 210 | 2 | 00:58:00 - 01:00:00 | |
| 205 | 2 | 01:00:00 - 01:02:00 | He02 |
| 200 | 2 | 01:02:00 - 01:04:00 | 80/20 |
| 195 | 2 | 01:04:00 - 01:06:00 | |
| 190 | 2 | 01:06:00 - 01:08:00 | |
| 186 | 2 | 01:08:00 - 01:10:00 | |
| 182 | 2 | 01:10:00 - 01:12:00 | |
| 178 | 2 | 01:12:00 - 01:14:00 | |
| 174 | 2 | 01:14:00 - 01:16:00 | |

Table A-13

FINAL SCHEDULE - 500-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|---------------------------|
| 170 | 2 | 01:16:00 - 01:18:00 | HeO ₂ 80/20 |
| 168 | 2 | 01:18:00 - 01:20:00 | |
| 166 | 2 | 01:20:00 - 01:22:00 | |
| 164 | 2 | 01:22:00 - 01:24:00 | |
| 162 | 2 | 01:24:00 - 01:26:00 | |
| 160 | 2 | 01:26:00 - 01:28:00 | |
| 158 | 2 | 01:28:00 - 01:30:00 | |
| 156 | 2 | 01:30:00 - 01:32:00 | |
| 154 | 2 | 01:32:00 - 01:34:00 | |
| 152 | 2 | 01:34:00 - 01:36:00 | |
| 150 | 2 | 01:36:00 - 01:38:00 | |
| 148 | 2 | 01:38:00 - 01:40:00 | |
| 146 | 2 | 01:40:00 - 01:42:00 | |
| 144 | 2 | 01:42:00 - 01:44:00 | Air |
| 142 | 2 | 01:44:00 - 01:46:00 | |
| 140 | 2 | 01:46:00 - 01:48:00 | |
| 138 | 2 | 01:48:00 - 01:50:00 | |
| 136 | 2 | 01:50:00 - 01:52:00 | |
| 134 | 2 | 01:52:00 - 01:54:00 | |
| 132 | 2 | 01:54:00 - 01:56:00 | |
| 130 | 2 | 01:56:00 - 01:58:00 | |
| 128 | 2 | 01:58:00 - 02:00:00 | |
| 126 | 2 | 02:00:00 - 02:02:00 | |
| 124 | 2 | 02:02:00 - 02:04:00 | |
| 122 | 2 | 02:04:00 - 02:06:00 | |
| 120 | 2 | 02:06:00 - 02:08:00 | |
| 118 | 2 | 02:08:00 - 02:10:00 | |
| 116 | 2 | 02:10:00 - 02:12:00 | |
| 114 | 2 | 02:12:00 - 02:14:00 | |
| 112 | 2 | 02:14:00 - 02:16:00 | |
| 110 | 4 | 02:16:00 - 02:20:00 | RR 15-70 |
| 108 | 4 | 02:20:00 - 02:24:00 | |
| 106 | 4 | 02:24:00 - 02:28:00 | |
| 104 | 4 | 02:28:00 - 02:32:00 | |
| 102 | 4 | 02:32:00 - 02:36:00 | |
| 100 | 4 | 02:36:00 - 02:40:00 | |
| 98 | 4 | 02:40:00 - 02:44:00 | |
| 96 | 4 | 02:44:00 - 02:48:00 | |

Table A-13

FINAL SCHEDULE - 500-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|-------|
| 94 | 4 | 02:48:00 - 02:52:00 | Air |
| 92 | 4 | 02:52:00 - 02:56:00 | |
| 90 | 5 | 02:56:00 - 03:01:00 | ↓ |
| 88 | 5 | 03:01:00 - 03:06:00 | |
| 86 | 5 | 03:06:00 - 03:11:00 | |
| 84 | 5 | 03:11:00 - 03:16:00 | |
| 82 | 5 | 03:16:00 - 03:21:00 | |
| 80 | 5 | 03:21:00 - 03:26:00 | |
| 78 | 5 | 03:26:00 - 03:31:00 | |
| 76 | 5 | 03:31:00 - 03:36:00 | |
| 74 | 5 | 03:36:00 - 03:41:00 | |
| 72 | 5 | 03:41:00 - 03:46:00 | |
| 70 | 13 | 03:46:00 - 03:59:00 | |
| 68 | 13 | 03:59:00 - 04:12:00 | |
| 66 | 13 | 04:12:00 - 04:25:00 | |
| 64 | 13 | 04:25:00 - 04:38:00 | |
| 62 | 13 | 04:38:00 - 04:51:00 | |
| 60 | 13 | 04:51:00 - 05:04:00 | |
| 58 | 13 | 05:04:00 - 05:17:00 | |
| 56 | 13 | 05:17:00 - 05:30:00 | |
| 54 | 13 | 05:30:00 - 05:43:00 | |
| 52 | 13 | 05:43:00 - 05:56:00 | |
| 50 | 18 | 05:56:00 - 06:14:00 | ↓ |
| 48 | 18 | 06:14:00 - 06:32:00 | |
| 46 | 18 | 06:32:00 - 06:50:00 | |
| 44 | 18 | 06:50:00 - 07:08:00 | |
| 42 | 18 | 07:08:00 - 07:26:00 | |
| 40 | 18 | 07:26:00 - 07:44:00 | |
| 38 | 18 | 07:44:00 - 08:02:00 | |
| 36 | 18 | 08:02:00 - 08:20:00 | |
| 34 | 18 | 08:20:00 - 08:38:00 | |
| 32 | 18 | 08:38:00 - 08:56:00 | |

Table A-13

FINAL SCHEDULE - 500-FOOT/30-MINUTE (Continued)

| Depth (ft) | Time (min) | Elapsed Time (hr:min:sec) | Media |
|------------|------------|---------------------------|----------------|
| 30 | 30 | 08:56:00 - 09:26:00 | Air |
| 28 | 20 | 09:26:00 - 09:46:00 | O ₂ |
| 26 | 30 | 09:46:00 - 10:16:00 | Air |
| 24 | 20 | 10:16:00 - 10:36:00 | O ₂ |
| 22 | 30 | 10:36:00 - 11:06:00 | Air |
| 20 | 30 | 11:06:00 - 11:36:00 | O ₂ |
| 18 | 30 | 11:36:00 - 12:06:00 | Air |
| 16 | 30 | 12:06:00 - 12:36:00 | O ₂ |
| 14 | 30 | 12:36:00 - 13:06:00 | Air |
| 12 | 30 | 13:06:00 - 13:36:00 | O ₂ |
| 10 | 30 | 13:36:00 - 14:06:00 | Air |
| 10 | 30 | 14:06:00 - 14:36:00 | O ₂ |
| 10 | 30 | 14:36:00 - 15:06:00 | Air |
| 10 | 30 | 15:06:00 - 15:36:00 | O ₂ |
| 10 | 30 | 15:36:00 - 16:06:00 | Air |
| 10 | 20 | 16:06:00 - 16:26:00 | O ₂ |
| 10-0 | 10 | 16:26:00 - 16:36:00 | O ₂ |

Times at the decompression stops include the time required for travel to next stop.

Bends-free Man-Dives: 2
Decompression Sickness: 0

Appendix B

DIVER DATA

Table B-1 Diver Data . . . 105

Table B-1
DIVER DATA

| Name | Rate | NEC | Birth Date | Ht. (in.) | Wt. (lbs.) | Service No. |
|-----------------|------|------|----------------|-----------|------------|-------------|
| Anderson, J.W. | EMC | 5341 | Birth Year '25 | 67.0 | 170 | 871-18-77 |
| Beckham, C. | BMC | 5341 | | | | |
| Bigger, F.N. | BMCS | 5341 | Birth Year '30 | 73.5 | 222 | 719-82-89 |
| Blackburn, R.M. | A01 | 5342 | Birth Year '39 | 74.0 | 201 | 521-42-44 |
| Brady, J.A. | SFC | 5342 | | | | 288-99-60 |
| Brauner, F.H. | SFC | 5341 | Birth Year '35 | 72.5 | 180 | 921-60-08 |
| Brown, J.A. | SFC | 5342 | Birth Year '36 | 71.0 | 165 | 288-99-60 |
| Bruneau, R.W. | TM1 | 5342 | 6 Aug 36 | 73.0 | 216 | 901-70-99 |
| Buckner, M.L. | SWC | 5342 | | | | |
| Casse, R.G. | BM1 | 5342 | Birth Year '39 | 72.0 | 198 | 514-13-35 |
| Cato, M. P. | BMC | 5342 | 30 Aug 39 | 71.5 | 172 | 515-50-57 |
| Coffman, W.R. | TM1 | 5342 | Birth Year '33 | 73.0 | 200 | 061-08-36 |
| Donaldson, G.B. | HM1 | 8493 | Birth Year '34 | 72.0 | 185 | 253-37-35 |
| Duff, C.W. | HMC | 8493 | Birth Year '30 | 58.0 | 215 | 364-61-99 |
| Douthit, B. | PH2 | 5342 | 16 Jan 35 | 69.5 | 170 | 749-35-57 |
| French, W.T. | ETC | 5342 | Birth Year '27 | 71.5 | 170 | 264-48-90 |
| Garrahan, R.N. | W-1 | 5342 | Birth Year '36 | 70.0 | 145 | 492-00-08 |
| Green | LT | | | | | |
| Harter, J. | LCDR | | | | | |
| Hendry, H.E. | HM1 | 8493 | 29 Jul 34 | 66.0 | 170 | 422-98-22 |
| Houle, H.R. | BM2 | 5342 | Birth Year '44 | 71.0 | 171 | 903-68-21 |
| Jones, H.G. | HMC | 8493 | Birth Year '32 | 75.0 | 235 | 327-15-47 |
| Kerr, J.H. | BM1 | | Birth Year '33 | N.R. | N.R. | 281-42-06 |
| Kemedy, C.B. | ST1 | 5342 | 20 Oct 31 | 71.0 | 165 | 752-93-28 |
| Langdon | DCC | 5342 | | | | |
| Lazaro, J.C. | EN2 | 5342 | Birth Year '28 | 69.0 | 146 | 256-79-06 |
| Mandible, A.G. | GMG1 | 5342 | 20 Feb 35 | 69.5 | 170 | 462-35-60 |
| May, M.J. | BM1 | 5343 | 12 Oct 42 | 66.0 | 164 | 586-77-68 |
| Meeks, D.W. | BM1 | 5342 | 23 Jun 41 | 68.75 | 137 | 532-15-29 |
| Mesplay, W.L. | SFC | 5342 | 21 Dec 36 | 68.0 | 162 | 467-69-35 |
| Mullen, J.E. | BMC | 5342 | 12 Aug 39 | 64.0 | 160 | 494-95-62 |
| Mulally, R.L. | DCC | 5341 | 9 Jan 34 | 73.0 | 179 | 445-43-31 |
| Mundy, J.G. | PH1 | 5342 | Birth Year '41 | 67.0 | 162 | 525-13-54 |
| Parkinson, T. | PHC | | Birth Year '30 | 76.0 | 200 | 558-24-74 |
| Pratt, J.L. | DC2 | 5342 | 26 May 42 | 78.0 | 229 | 585-19-83 |
| Reedy, T.W. | HMC | 5342 | 12 Sep 41 | 68.0 | 155 | 536-30-85 |
| Rudin, I.C. | BM1 | 5342 | 29 Dec 32 | 73.0 | 155 | 231-65-19 |
| Taylor, J. | BMC | 5342 | | | | 351-70-57 |
| Stubbs, J.P. | SFM2 | 5342 | Birth Year '41 | 70.5 | 216 | 965-52-77 |
| Sundstrom, E. | MMCS | 5342 | 30 Nov 31 | 70.0 | 180 | 388-59-07 |
| Villasenor | GMC | 5341 | | | | |
| Wallace, K. | BMC | 5341 | | | | 761-75-84 |

Table B-1 (Continued)

DIVER DATA

| Name | Rate | NEC | Birth Date | Ht. (in.) | Wt. (lbs) | Service No. |
|-----------------|------|------|----------------|-----------|-----------|-------------|
| Wells, R.V. | MNCS | 5342 | Birth Year '30 | 68.5 | 164 | 349-78-85 |
| Winters, W. | ENC | 5342 | 16 Nov 40 | 71.5 | 168 | 514-13-26 |
| Wyatt, F.M. Jr. | BMC | 5342 | 23 Aug 28 | 78.0 | 180 | 787-73-57 |

Description of NEC Codes:

5341 - Master Diver
5342 - First Class Diver
5343 - Second Class Diver
8493 - Diving Medical Technician
8196 - Photographer

Appendix C

SUMMARY OF DECOMPRESSION SICKNESS

| | | |
|-----------|--|-----|
| Table C-1 | Decompression Sickness by Dive Group . . . | 109 |
| Table C-2 | Decompression Sickness by Diver | 111 |

Table C-1
DECOMPRESSION SICKNESS BY DIVE GROUP

| Dive Group | Dive No. | Diver | Depth of Occurrence | Symptoms | NAVY DIVING Accident Report No. | Treatment* |
|---------------|---|----------|---------------------|--|---------------------------------|--|
| 300-ft/15-min | No decompression sickness reported for this group | | | | | |
| 300-ft/30-min | 3 | Mullen | 50 ft. on ascent | Pain in right knee | 3643 | Recompressed to 100 feet |
| | 5 | Jones | After surfacing | Numbness in arms. Pain in right forearm, groin and legs | 3644 | Recompression (Table 6) |
| 300-ft/60-min | No decompression sickness reported for this group | | | | | |
| 350-ft/15-min | No decompression sickness reported for this group | | | | | |
| 350-ft/30-min | No decompression sickness reported for this group | | | | | |
| 350-ft/60-min | 1 | Garrahan | 15 ft. on ascent | Inkle, left knee | Not reported | Recompressed to 30 feet |
| | 2 | Brauner | 32 ft. on ascent | Twinge, left knee | 3503 | Recompressed to 50 feet |
| | 3 | Mullen | 70 ft. on ascent | Rash on back and stomach | Not reported | O ₂ for 20 min at 60 feet and 58 feet |

* Treatment Tables referred to in this Column are found in U.S. Navy Diving Manual, NAVSHIPS 0994-001-9010, March, 1970.

Table C-1

DECOMPRESSION SICKNESS BY DIVE GROUP (Continued)

| Dive Group | Dive No. | Diver | Depth of Occurrence | Symptoms | NAV/DIVINGU Accident Report No. | Treatment |
|---------------|---|-------------|---------------------|---|---------------------------------|-------------------------|
| 400-ft/15-min | 2 | Rudin Meeks | After surfacing | Rudin-Pain in rt knee Meeks-Pain in both knees, sore right thigh | 3636 3637 | Recompression (Table 5) |
| | 4 | Pratt | After surfacing | Pain in right leg | 3642 | Recompression (Table 5) |
| 400-ft/30-min | No decompression sickness reported for this group | | | | | |
| 400-ft/60-min | 3 | Garrahan | After surfacing | Slight ache in rt knee | 3477 | Recompressed to 33 feet |
| | 4 | Lazaro | After surfacing | Pain in calf of left leg | 3478 | Recompression (Table 5) |
| | 6 | Donaldson | 44 ft on ascent | Pain in left knee & groin | 3472 | Recompressed to 60 feet |
| 450-ft/15-min | No decompression sickness reported for this group | | | | | |
| 450-ft/30-min | 5 | Donaldson | 14 ft on ascent | Pain in rt knee | 3468 | Recompression (Table 5) |
| 450-ft/60-min | 3 | Casse | 98 ft on ascent | Dizziness and nausea | 3491 | No treatment |
| 500-ft/30-min | No decompression sickness reported for this group | | | | | |

Table C-2

SUMMARY OF DECOMPRESSION SICKNESS BY DIVER

| Diver | Dive Group | Dive No. | Depth of Occurrence | Date |
|-----------|---------------|----------|---------------------|-----------|
| Brauner | 350-ft/60-min | 2 | 32 feet (Ascent) | 14 Apr 66 |
| Casse | 450-ft/60-min | 3 | 98 feet (Ascent) | 13 Oct 66 |
| Donaldson | 400-ft/60-min | 6 | 44 feet (Ascent) | 6 Oct 66 |
| | 450-ft/30-min | 5 | 14 feet (Ascent) | 11 Oct 66 |
| Garrahan | 350-ft/60-min | 1 | 15 feet (Ascent) | 14 Oct 65 |
| | 400-ft/60-min | 3 | After surfacing | 26 May 66 |
| Jones | 300-ft/30-min | 5 | After surfacing | 10 Jul 67 |
| Lazaro | 400-ft/60-min | 4 | After surfacing | 9 Jun 66 |
| Meeks | 400-ft/15-min | 2 | After surfacing | 6 Jun 67 |
| Mullen | 300-ft/30-min | 3 | 50 feet (Ascent) | 6 Jul 67 |
| | 350-ft/60-min | 3 | 70 feet (Ascent) | 26 Apr 67 |
| Pratt | 400-ft/15-min | 4 | After surfacing | 15 Jun 67 |
| Rudin | 400-ft/15-min | 2 | After surfacing | 6 Jun 67 |